# NAEB JOURNAL

NOVEMBER-DECEMBER 1960

An Art Museum Uses TV p. 38

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## On the cover . . .

Brian O'Doherty extends a weekly "Invitation to Art" to television viewers from the galleries of Boston's Museum of Fine Arts. A poet, painter, and doctor of medicine, as well as an experienced art critic, Dr. O'Doherty has built a large popular following for the museum shows through his original — but always scholarly — interpretation of the arts. See story on page 38.

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an editorial

# The Limitations of Teaching Machines

There was a time when teachers feared radio and television. Their fear in the early days of broadcasting was that these potentially useful instruments might eventually replace the teacher in the classroom. Most teachers today have become convinced from their own experience that neither radio nor television can or should replace the teacher. They now realize that these two media can be of substantial assistance when properly used. And that, by assuming certain routine teaching functions for the entire class, they can provide the teacher with more time for the individualization of instruction which is essential if she is to meet the differing needs of the individual pupils.

The emergence of teaching machines has again frightened some of today's teachers. Actually, there should be no more reason for concern as to their replacing teachers than has been the case with radio and television.

Perhaps some teachers have heard extravagant claims as to what the teaching machines can do. This is not surprising. The equipment salesman is anxious to make a sale. The school administrator may see the purchase of these machines as a measure for effecting budget economies. But the classroom teacher should not be concerned. Teaching machines can be most useful, as has been amply demonstrated. So, before taking a negative attitude toward these gifts of today's technology, it might be well for the skeptic to consider a few facts about them.

Teaching machines, in the judgment of this writer, are most effective when they take over the routine functions involving the teaching of important skills. For example, the machines now used in the better language laboratories make it possible for each student in a class to use a tape-recording device to compare his successive attempts at speaking a foreign language with the same word, phrase, or sentence as spoken by a native. Another machine which has proved its value in the educational process can greatly increase the reading rate of a slow reader. Other equally valuable machines are now available.

But to point out these and many other teaching machines which take over routine duties of the classroom teacher and give her more time to adjust to the individual differences of her pupils is not to say that every activity of the

classroom teacher can be taken over by a machine.

This writer believes that no satisfactory teaching machine can be developed which will take from the classroom teacher the entire function of teaching important concepts, inculcating appropriate attitudes, developing desirable ideals, and assisting in the acquisition of moral and ethical character. These have always been the responsibility of the classroom teacher and her successes in these areas have been important criteria by which her ability as a teacher has been judged. Teaching machines, by relieving the teacher of much of the routine drudgery involved in perfecting certain skills among members of her class, free her for the more important teaching tasks, among which is the essential one of preparing her students for effective living in our democratic society.

Should not all of us welcome the teaching machines for what they can do and not be misled by the extravagant claims of the overzealous, be he salesman, administrator, or teacher?

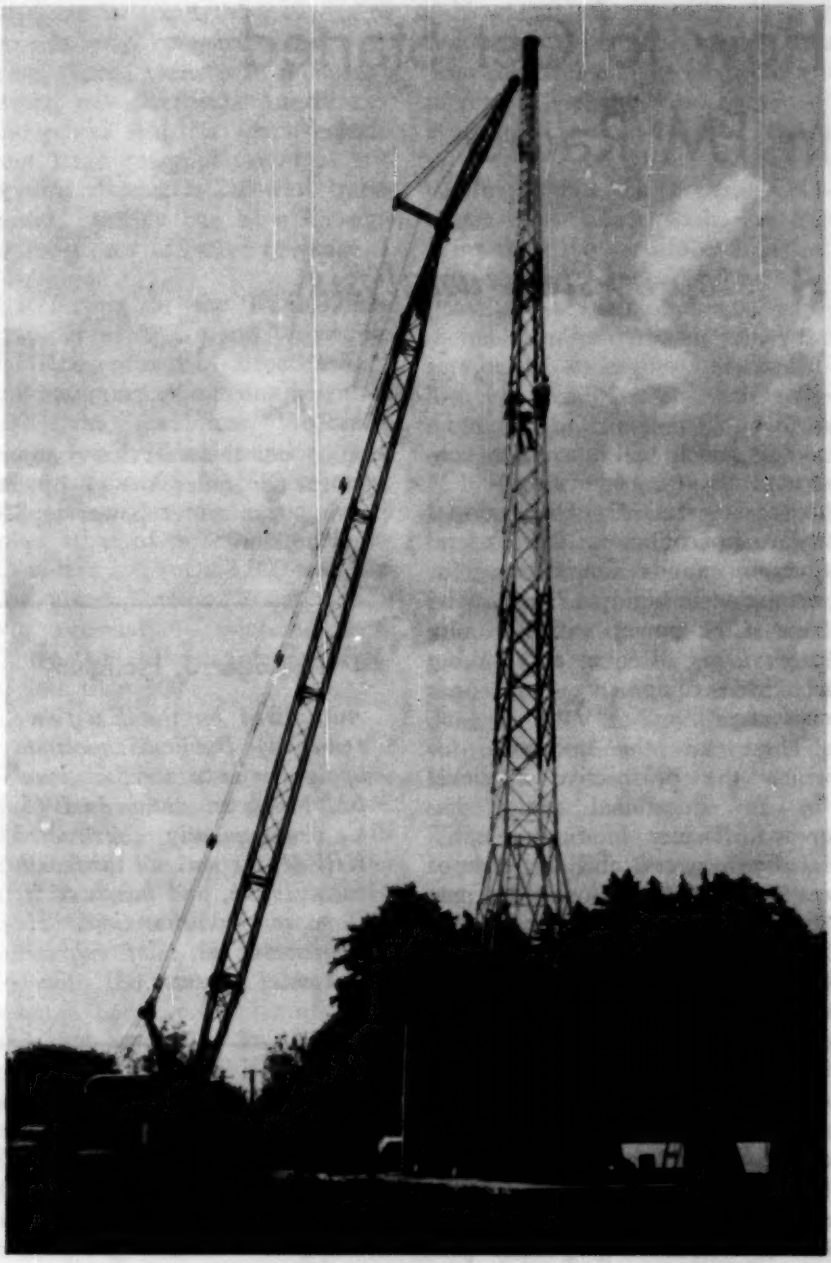
TRACY F. TYLER, *Editor.*

## Letter to the Editor—

### International Issue

The July-August, 1960, issue of the *NAEB Journal* was certainly outstanding and in my opinion reaches a new level for this publication. While every article has its merits, the series dealing with the current status of foreign broadcasting will supply a very convenient take-off point for those desiring to do future investigation in this area.

**Elmer G. Sulzer**
*Director, Radio-TV Communications*
*Indiana University*
*Bloomington, Indiana*



A 125-foot self-supporting tower is positioned by a professional erection crew at the new site of KRVM, Eugene (Oregon) Public Schools' FM station.

# How to Get Started in FM Radio

## *A step-by-step analysis*

How much will it cost to construct a new educational FM broadcast station? How do I make application to the Federal Communications Commission for permission to build such a station? How much power will I require to serve my listening area? What technical equipment items are necessary?

These are the questions for which the prospective applicant for an educational station has great difficulty in finding satisfactory answers, and the lack of readily available information may be in part responsible for the disappointingly small number of educational FM stations in current operation. This view was frequently expressed at the 1959 NAEB radio managers' seminar at the University of Wisconsin, and this article was prepared in response to a number of requests for such technical information about educational stations voiced at that time. Also it may be helpful to managers of 10-watt educational stations who are considering pushing out their service contours another ten miles or so by increasing transmitter power to 250 watts or more.

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By **Roger J. Houglum**

*Authorized by the Eugene (Oregon) Public Schools to apply for a new educational FM broadcast station in 1945, he subsequently constructed KRVM, the nation's thirteenth such station, and has been its manager since that time. He also serves as chief engineer and chief operator.*

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Perhaps the most perplexing preliminary problem faced by a person authorized to prepare an application for a new educational FM broadcast station is that of deciding what basic transmitter power to use. As a general statement, 10 watts of power is only

adequate in small urban areas or in relatively compact school districts. Large cities with their high levels of electrical interference and school districts which encompass large geographical areas will require at least a 250-watt transmitter, possibly one of a kilowatt or more, for effective coverage.

Referring to the FCC nomograph entitled "Ground Wave Signal Range for FM Broadcasting" and assuming an antenna height of 100′, the maximum theoretical range for a 10-watt station (distance to the .05 MV/M contour) appears to be approximately 13 miles; that of a 250-watt station, 23 miles; and for a 1,000-watt station, about 30 miles. Rough terrain will substantially decrease these figures, as will an antenna height of less than 100′.

Actually, the FCC will rate the power of your station on other than the transmitter power alone. At KRVM, for example, our transmitter has an output power of 250 watts. Our 160′ transmission line has an efficiency of 72% which results in the antenna being fed with 180 watts of power. The antenna has a power gain of 1.8 and this results in an "effective radiated power," or ERP, of 324 watts (180 x 1.8), the figure appearing in our station license. Thus it can be seen that the higher the power gain of the antenna used, the greater the ERP of the station, resulting in increased coverage for a given transmitter power.

Now that the transmitter power requirement of your station has been determined, it is necessary to remind you that construction of a new station should not be started until a "construction permit" is obtained from the Federal Communications Commission. At this point there are several courses of action open to you. The first approach, that used by most commercial applicants, is to retain the services of an engineer and an attorney specializing in such radio matters. Unfortunately this will be expensive and perhaps beyond your means; second, you can obtain assistance from some person on the technical staff of your local radio or TV station with previous experience in preparing such applications; or, if your radio background is extensive, you may choose to "go it alone," as we have done at KRVM, and prepare the entire application without outside aid.

For most applicants the second approach will be the recommended one, and this will assume that you will prepare the various exhibits dealing with programing, legal organization, and financing — and that your assistant will prepare all engineering exhibits and additionally give you general supervisory assistance with the total application. His fee for such services will probably be $200 to $300, possibly less. This figure will include the preparation of an engineering statement which, in narrative form, describes in detail the radio facilities which are being

requested, the equipment which will be used, the area which the proposed station will serve, together with an explanation of the various engineering exhibits submitted. These will normally include: topographic profiles showing the elevation of terrain in reference to the height of the antenna up to a distance of ten miles and in eight compass directions; an aeronautical chart showing the site of the proposed station in relation to established airways and airports, and indicating the 1.0 MV/M and .05 MV/M service contours of the station; a sketch of the antenna and its supporting structure; and one or more aerial photographs of the proposed antenna site.

Two extra copies of the exhibits dealing with the antenna and supporting structure and that of the site in relation to existing airways and airports should be prepared to submit to the nearest regional office of the Federal Aviation Authority. That office will supply you with the necessary forms to submit with these exhibits in support of your request for air space clearance.

Now obtain five copies of FCC Form 340 from the nearest Field Engineering Office of the Commission. Two of these, with accompanying exhibits, will be submitted after completion to the Commission, two will go in your file, and the remaining one will be your working copy.

You will note that Form 340 requires extensive information as to the technical equipment proposed and its cost. This is our next area of study.

Unless you have an extensive technical background, it will be wise to purchase all technical equipment either new or factory reconditioned from a reputable supplier. Some of the transmitters and audio consoles of a decade or so ago, while offered at attractive prices, might require extensive rebuilding to meet present FCC technical standards for noise, distortion, and frequency response. This could prove to be both time-consuming and expensive.

Also, there have been important technical improvements in FM transmitters in recent years which have resulted in greatly improved performance and substantially lowered operating costs, particularly in the area of tube replacement. In today's "serrasoid" exciter units, for example, all of the tubes save one are of the receiving type, and this one is in the five-dollar category. By contrast, the "phasitron" circuit so popular ten years ago required a special custom-made GE tube priced at $90 and nearly unobtainable today at any price.

Assuming that you have the floor-space equivalent of at least two classrooms for your radio station's operational area and a roof top that will hold the antenna and its short supporting tower of wood or steel well in the clear, your basic equipment items for a station of 250 watts or 1,000 watts

power would be as follows:[1]

**Antenna Equipment**

| | |
|---|---|
| 1 Antenna with power gain of 1.6 times | $550 |
| 150' Coaxial transmission line, 1/2" diameter, polyethylene-foam type | 120 |

**Transmitter**

| | |
|---|---|
| 1 250-Watt FM Transmitter with spare tubes and crystal | 3300 |
| (or) | |
| 1 1,000-Watt FM Transmitter with spare tubes and crystal | 5400 |

**Monitoring Equipment**

| | |
|---|---|
| 1 Modulation and Frequency Monitor complete with tubes and crystal | 1700 |

**Audio Equipment**

| | |
|---|---|
| 1 Compressor-type program amplifier with tubes and power supply | 260 |
| 1 Audio Console with mixing and control facilities for microphones, turntables, and remote circuits | 1100 |
| (or) | |
| 1 Audio Consolette (with somewhat fewer facilities than above Console) | 900 |
| 2 Three-speed turntables each with viscous-damped transcription arm, variable-reluctance cartridge, diamond stylus, and equalized pre-amplifiers | 500 |
| 4 Studio and announce microphones (various types) | 240 |

**Recording Equipment**

| | |
|---|---|
| 1 Professional-type single-track tape recorder with carrying case | 600 |
| (or) | |
| 1 Single-track tape recorder | 140 |

**Miscellaneous**

| | |
|---|---|
| Monitoring speakers, warning lights, headphones, microphone stands, plugs, connectors, microphone cable, and shielded audio cable | 250 |

From the above figures we can derive the total equipment cost of a 250-watt educational station as being approximately $8,600 for the items recommended, and that of a 1,000-watt station about $10,700. By substituting the consolette for the full-size console, $200 can be saved at the expense of some flexibility in operation; substituting the home-entertainment-type tape recorder for the professional one will cut $460 from the total, but at appreciable sacrifice of quality and reliability; and the compressor amplifier, itself, could be eliminated to cut another $260, but this would noticeably reduce the station's average program level and consequently its effective coverage.

Now that you have the basic information requested in FCC Form 340, complete all the required exhibits and type in all the data in the spaces provided. Prepare four separately bound copies of Form 340, each with its accompanying exhibits. Check meticulously for errors and omissions. Keep two copies for your own file. Of the other two copies, have the appropriate person swear to Section I of one copy, then mail both copies together with an appropriate covering letter to Mr. Ben Waple, Secretary, Federal Communications Commission, Washington 25, D. C.

Within a few weeks you will receive a post card acknowledging your application and assigning a file number to be referred to in all subsequent correspondence with the Commission. If your application is complete and free from errors, within eight to ten weeks you should receive a telegram from the Commission stating that your construction permit has been granted.

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[1] I would like to acknowledge the assistance of Mr. Franz Cherny of the Gates Radio Company, Quincy, Illinois, in providing current cost information on major equipment items.

Post this telegram at the transmitter site. The construction permit, itself, will arrive later by mail. Post it as well and all subsequent letters or telegrams. The station can now be constructed under the exact terms set forth in your application and the construction permit.

When the station is ready for testing, telegraph the Commission for "equipment test" authority, with a copy to the nearest field engineer's office. Following the equipment test, the field engineer will inspect the station and its "proof of performance" data. Upon his approval of the construction you should now make application for station license on FCC Form 341, submitting two copies and keeping two copies for your file.

When this application is on file with the Commission, telegraph for "program test" authority. When it is received, you may operate your new educational station exactly as if it were fully licensed. The actual station license may not be received for several months. Be sure to post it at the transmitter when it arrives.

A subsequent article will deal with staff organization, use of the educational station as a laboratory for vocational training of radio station personnel, and suggestions on the development of a program schedule for both in-school listening and the general public.

KRVM's original main studio and announcer's studio were obtained by remodeling an elementary classroom.

# Tuesday Night — Opera Night in Bloomington

## *WFIU Radio broadcasts from the Metropolitan via tape*

By **Herbert Seltz**

*Program director, WFIU, Indiana University.*

While the vast majority of the Metropolitan Opera's nationwide unseen audience listens to the opera broadcasts on Saturday afternoon, a comparatively small, but devoted and vocal audience waits until the following Tuesday evening to hear the broadcasts. This group, located in and around Bloomington, Indiana, hears the Met broadcasts on Indiana University's FM station, WFIU. There is a story in back of this unusual situation. . . .

For many years, the opera broadcasts were heard in the Bloomington area over the local commercial radio station. The station, an ABC affiliate, carried the programs each Saturday afternoon as part of its regular schedule. When CBS became the originating network, the station announced that it would not be able to carry the opera broadcasts. In some communities, this would fall under the heading of bad luck, and "Perhaps we can do something about it next year." This was not the case in Bloomington.

Anyone associated with or interested in the affairs of the Metropolitan Opera Company knows of the strong ties that exist between the company and Indiana University. Bloomington has been a regular stop on the spring tour since 1942. This association between the university and the company is strengthened each May when two performances are given in the university's 4,000-seat auditorium. In addition, there are strong personal ties between the company and faculty members of the I.U. School of Music. The School of Music, an internationally known center of opera production, has a distinguished faculty,

many of whom were formerly associated with the Metropolitan Opera Company. It is only natural that opera lovers in the Bloomington area—some of whom were formerly with the company, others who loyally attend the annual tour performances, and still others whose only contact with the company was by radio—expressed their interest in having the opera broadcasts continue.

With the area's one commercial station being unable to obtain the broadcasts, the university station, WFIU, considered the possibility of carrying the opera programs. After several long-distance calls and exchanges of correspondence, it was evident that many obstacles would have to be circumvented before the sponsored opera broadcasts could be carried by a noncommercial educational station. These obstacles, too numerous to detail, separated into two general categories: acquisition and permission. The latter involved such issues as: Can an educational station take programs from a commercial network and carry sponsored programs? If the opera company would grant permission, would the network and its affiliate stations in our area do so? Other clearances were necessary—from the client (in this case Texaco Inc.), the advertising agency, and the American Federation of Musicians.

Assuming that the necessary permissions and clearances could be obtained, how could WFIU acquire the programs? The usual method, a radio loop, was out of the question. The station could not afford to pay the line charges resulting from over twenty opera broadcasts, each approximately four hours in length.

While we were waiting on replies to what was becoming a rapidly increasing amount of correspondence pertaining to the various clearance issues, the problem of acquisition was discussed with the then CBS affiliate in Louisville, WHAS. If WFIU could obtain the necessary clearances, WHAS agreed to tape record the opera broadcasts and supply them for delayed broadcast. With this encouraging development acting as a stimulus, efforts to obtain the much-needed permissions were intensified.

Finally all clearances were obtained and WHAS was notified that it could proceed with the recordings. Although the correspondence and inquiries were started in the early fall, final plans were not formulated and approved until after the opera broadcasts were under way. The first opera of the 1958-59 repertoire carried by WFIU was *La Gioconda,* the seventh broadcast of the season. An additional item of interest and color centered around the method of transporting the tapes from Louisville to Bloomington. It was decided that the regularly scheduled bus line would provide the quickest shipping service beween the two cities. It was a proud day when the WFIU music director returned from the bus station with the shipping case containing *La Gioconda.*

At this point, I would like to say that *La Gioconda* and the thirteen broadcasts that followed were programed with no interruptions or difficulties; unfortunately, this wasn't quite the case. While the operas that made up the remainder of the season were successfully and otherwise uneventfully programed, *La Gioconda* suffered from opening-night jitters.

It seems that in our haste to start with *La Gioconda* (by this time we had already missed the first six broadcasts), we failed to perfect our traffic and tape-handling procedure. This oversight caused the WFIU broadcast of *La Gioconda* to end abruptly after the "Dance of the Hours." Any doubts concerning the number of listeners we would have for our three-day delayed opera broadcasts were quickly allayed by the number of phone calls that were received at the station. The announcer acknowledged the difficulty and assured the audience that the remainder of the opera would be played as soon as the final tape was located. Fortunately, the tape was found the next morning, placed on the first northbound bus, and arrived in time to be played that evening. This incident prompted one listener to write: "Three-fourths of Gioconda is better than none, good luck with the rest of the season . . . and thanks for bringing the Met broadcasts to Bloomington."

The experience gained during the initial season of the Metropolitan Opera-WFIU affiliation proved to be an invaluable asset in assisting the station to obtain the programs for a second year. Last year, fortified with technical and programing confidence, and an impressive amount of favorable correspondence from its audience, WFIU obtained the full schedule of opera broadcasts from CBS. While the method of acquisition is still the same, the tapes are being supplied by other CBS affiliates in our area.

The staff of WFIU is extremely grateful for the cooperation evidenced by the many organizations that make the operas available to us. Everyone — the network, client, advertising agency, affiliates, and the musicians' union, have encouraged us, and have been more than cooperative. We feel that this venture is strong indication of the benefits that can be obtained when educational and commercial broadcasting interests work together. WFIU is looking forward to many more seasons of carrying the Metropolitan Opera broadcasts.

# The Federal Government in Television

## *Agencies other than the FCC are involved*

By **Franklin Dunham**

*Chief, radio-television, U. S. Office of Education.*

The electro-visible population report in the entrance foyer of the Department of Commerce shows over 179,000,000 people now residing in the United States. As the seconds click off gains and losses, we move on toward that 200,000,000 forecast for 1970.

Television is now estimated to reach 45 million homes. There are only 51 million homes. So television now is available to 87 per cent of American households. In 1970 it will probably be in practically every home in the land, bringing programs from every country in the world. Receiving sets with large screens will be standard equipment in every new home, possibly in the walls of every living room, recreation room, and study. Portable receivers will take television outdoors as well, and meanwhile, radio will continue to serve in its appropriate ways at hours fitting American living habits.

When Congressman (later Senator) Wallace White and his associates wrote the first draft of the Federal Radio Act of 1926, they could hardly have envisaged a total service to the people of the United States of a mass medium of communications, instantaneous and of intense personal interest to the people of our country, serving everyone. As I look back myself, I find it hard to realize that I have been in broadcasting now almost forty years and that my first programs were produced even some five years before the first Act itself was written. How obsolete can we get? Perhaps only as obsolete as the Declaration of Independence and the Constitution, and I believe what we still have to give the world rests principally upon these two living documents.

It is interesting to read the debates on the White Bill, which later became law in 1927. Broadcast licenses had been granted by the Department of Commerce until this Act went into effect. The Act provided for the Federal Radio Commission of five members which would regulate radio broadcasting. It was specific in regard to the granting of licenses and set up procedures whereby qualified citizens who could show financial ability and were of good intentions, could compete in opening hearings for these frequencies over which, in turn, the public could be served.

The whole question of government ownership had been thrashed out. Services necessary for the protection of the country's vital military communications were provided for and considerable portions of the spectrum were reserved for use by the United States Government, but essentially it was decided that private citizens (or corporations) should be entrusted with the responsibility for broadcasting. This was a momentous decision on the part of Congress for, while recognizing a situation that existed, it also created by one bold stroke an industry which in television alone last year took in a billion and a half dollars in revenue. Education was not then recognized, because broadcasting was born in the aura of entertainment. It took a long time to recognize its news potentiality and even longer to recognize its educational impact. Now we know its value to education far exceeds that of any other service it can render.

By 1934, with the acceptance of the telephone and telegraph as natural monopolies, it was evident that the regulation of all communication could be brought under one body, and the seven-member Federal Communications Commission was born. "It is not generally realized that for every station which transmits programs to the general public there are about fifty more performing other useful services. For example, approximately 172,000 stations are contributing to the efficiency and safety of travel on land and water and in the air. Some 40,000 more are used by a wide variety of businesses and industrial enterprises. Added to these are about 25,000 that serve protective functions, such as police and fire protection. In fact at the close of 1957, the FCC had about two million radio authorizations on its books."[1] This gives some idea of the tremendous job which is performed by the FCC.

While a great deal has been said recently about the responsibilities of the FCC, not much has been mentioned about some of the other federal agencies which have influence on broadcasting and its regulation. I would like to point out some of these.

- Congress itself could amend the Act of 1934 and strengthen by specific mention any section or sections of the Act it deemed advisable. This might in effect also strengthen the hand of the FCC.

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[1]Walter B. Emery, "FCC, Its Powers, Functions and Procedure," *Journal of Broadcasting*, Spring 1958.

● The Federal Trade Commission exercises a role in television. Its decisions will probably not affect noncommercial educational broadcasting since it was set up to deal with malpractice in trade. Its basic function is to prevent "unfair methods of competition" and "unfair or deceptive acts or practices in commerce." Therefore, the entire area of advertising falls under its jurisdiction, including, of course, advertising over television. Its present course of punitive action against alleged violators of good advertising practice is ample evidence of its activity.

● Another agency which has a role to play is the Department of Health, Education and Welfare. One division, the Food and Drug Administration, has power to make rules and regulations in respect to quality and labeling of commodities. The administrator of this division of the HEW may condemn adulterated or misbranded products offered for sale in the field of foods, drugs, and cosmetics. It can easily be seen that this includes products advertised on television. By agreeing and cooperating with the Federal Trade Commission, it has worked to protect the public from being victimized by commodity malpractices. The primary concern of the Trade Commission is with advertising and the primary concern of the Food and Drug Administration is with mislabeling, but the two work closely together to bring culprits into account—and of course both can enforce their findings through cease-and-desist orders and, in the case of the FDA, seizure of products, injunctive actions and criminal prosecution by the Department of Justice.

Public Health, Social Service and Security, Rehabilitation, and all the other services of HEW use television, as do many other government agencies, but since 1932 in the Office of Education there has existed an activity concurrent with the use of broadcasting for educational purposes. Organized as the Radio Service in 1944, it was responsible for radio.

In 1949 it was given status as the Radio-Television Service, and it is now an integral part of the Educational Media Branch of the Office of Education. Successive Commissioners of Education have given of their time and energies to educational television. Commissioner Earl J. McGrath made the first plea to the FCC to set up hearings to reserve TV channels for the exclusive use of education —and this eventuated as the Sixth Report and Order of 1952, setting aside 244 channels for education, approximately 12 per cent of the entire TV spectrum. (This now represents 248 channels, since four more have been added.) In 1958, Title VII of the National Defense Education Act provided 18 million dollars for dissemination and research with these new media. Sixty-nine research projects have already been authorized, the ma-

jority of which have been allocated to educational television. Interim reports on these projects are already being received. Three official Office of Education conferences have already been held in cooperation with the National Association of Educational Broadcasters, first in 1950 to plead for the channels, then in 1958 to assess and evaluate results, and again in 1959 to discuss state and regional networks. The Office of Education has truly pioneered the course of educational television.

● The Office of Defense Mobilization, directly responsible to the President, assists and advises the President respecting all telecommunications functions in the Executive Branch. This includes (1) the coordination and development of telecommunication policies, and plans and policies of any general agencies to assure maximum security to the United States in times of emergency, and (2) assigning frequencies to government agencies. The director works in close cooperation with the Federal Communications Commission and is assisted by the Interdepartmental Radio Advisory Committee and by the Telecommunications Planning Committee. This is true in times of peace as well as in periods of emergency.

● The courts, particularly the United States Court of Appeals in the District of Columbia, have a distinct role to play in television. Appeals from FCC decisions may be taken to the Court of Appeals and, of course, major cases may be carried to the Supreme Court of the United States for adjudication and review, upon a writ of *certiorari*.

● The Department of Justice has a stake in television. It may advise the President on the legality of television matters. It also has the responsibility for preventing infractions of the anti-trust laws. Preservation, for example, of competition in the broadcasting industry is the responsibility of the Anti-Trust Division. Violations of Sections 1304 and 1464 of the U. S. Criminal Code making it unlawful to broadcast lotteries and indecent or profane language, are part of its responsibility. Of course, false advertising and mislabeling of food and similar commodities sold directly to the public come under its enforcement responsibility, as well as complaints from either the FTC or the Food and Drug Administration, respectively.

● Other branches of the government, including the Department of State, the Department of Defense, the Department of the Interior, the Treasury Department, the Commerce Department, the Department of Labor; and definite agencies such as the Bureau of Standards, the Library of Congress, the Archives of the United States; and the Military Academy at West Point, the Naval Academy at Annapolis, the Air Academy at Colorado Springs—all have a stake in television. The United States Information Agency is encouraging the use

of educational television abroad. The International Cooperation Agency and the U. S. Office of Education, along with the U.S.I.A., have been strong factors in the international use of television for both information and wide dissemination of practical helps to foreign countries in their educational TV problems.

● The Army, the Navy, the Air Force, and the Marine Corps, combined, now operate over thirty land-based TV stations at remote installations. All branches of the military utilize television in their teaching programs and so do many other agencies of government. All use television for public relations purposes.

The role of the Federal Government in television is, as you see, a large and growing one.

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**Statement required by the Act of August 24, 1912, as amended by the Acts of March 3, 1933, and July 2, 1946 (Title 39, United States Code, Section 223) showing the ownership, management, and circulation of the NAEB Journal published bimonthly at Urbana, Illinois, for October 1, 1960.**

1. The names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher: National Association of Educational Broadcasters, 119 Gregory Hall, Urbana, Illinois.

Editor: Tracy F. Tyler, 301 Johnston Hall, Minneapolis, Minnesota.

Managing Editor: Betty McKenzie, 119 Gregory Hall, Urbana, Illinois.

Business Manager: Harold E. Hill, 119 Gregory Hall, Urbana, Illinois.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual owner, must be given.) National Association of Educational Broadcasters, 119 Gregory Hall, Urbana, Illinois (no stockholders; a public corporation; incorporated, State of Illinois).

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.) Approximately 1600.

HAROLD E. HILL
Business Manager

Sworn to and subscribed before me this 1st day of October, 1960.

(SEAL) ROSALYA F. SCHMIDT
(My commission expires Nov. 29, 1962.)

# The Four Faces of Mass Communications

**a book review by Bernarr Cooper**

*Associate Professor, Florida State University*

*The Process of Communications.* By David K. Berlo. New York: Holt, Rinehart, and Winston, Inc., 1960. 317 pages.

*Introduction to Mass Communications.* By Edwin Emery, Philip H. Ault, and Warren K. Agee. New York: Dodd, Mead and Co., 1960. 435 pages. $5.00.

*The Mass Communicators.* By Charles S. Steinberg. New York: Harper and Brothers, 1958. 470 pages.

*Mass Communications.* Television, Radio, Film, Press. The Media and Their Practice in the United States of America. By Erik Barnouw. New York: Rinehart and Co., 1956. 280 pages.

The appearance of two new publications among the texts on mass communications, coupled with the potential of two slightly older texts, is clear evidence of the confusion which exists in the area known as "mass communications."

Considered as a group these publications run the gamut of emphasis from communication theory to the structured application of such theory in relation to academic course work offered under the various rubrics, "radio and television," "mass communications," "journalism," and "communications research."

If these publications make no other contribution, their grouping for consideration is revelatory of four distinct approaches to the "mass communications media."

* * *

● *The Process of Communications* by Berlo. Professor Berlo, head of the Department of General Communications Arts at Michigan State University, sets forth a text of review, comment, and clear indication of the potential of communications theory. The book is broadly divided into two parts: The first six chapters deal with the "communication process," and the last six with "language and communication."

The author in direct and simple language attacks the formidable problem of presenting the scope of communications as a process which is at once part of, and a reflection of human behavior. The basic approaches of Schramm and Osgood are acknowledged by the author and are, indeed, the mainstay and basis of his approach to an understanding of the process of communications and the role of language in it.

In logical and progressive steps Berlo sets forth his scope, gives models and illustrations of the communication process, and then sets up the determinants of the effect of the process of communications. Having set forth basic theory, he then resorts to whatever he deems relevant in interdisciplinary research in order to lend scope and meaning to the theory of the learning process as basic to communications in the personal context. From the personal he proceeds to the interpersonal and then to a consideration of communication and its application in social systems.

Berlo begins with man as a member of a social system. This membership is a basic determinant in communication. The author then goes on to point out that communication also takes place in a cultural context. The first portion of the text is concerned with predicting communications behavior from a knowledge of the individual, his personality, his way of learning and the rewards he receives.

Throughout the text, the author makes clear his basic contention: We cannot separate personal and social characteristics in the communications process. We cannot understand the process of communications without understanding the effects of culture, biological needs, knowledge, language and the effects of thought and belief.

Although he would have us believe this is meant as an introductory text only, Berlo has made a much broader contribution through his organization of the text. Used in a seminar situation, introducing the student to communication theory, and coupled with a structured selection of the exercises and readings which the author suggests, the book provides a solid basis for an introduction to depth-probing techniques and learning effectiveness experimentation.

The author has not meant his book as an abstract, a review, or an inventory of communications theories. However, his text may accomplish these ends and more in the hands of the skillful communications instructor.

● *The Mass Communicators* by Steinberg. Although Steinberg is as concerned with the process of communications as is Berlo, his concern is only in relation to the use of the process as a means for public relations work, and the use of the media by the public relations man to build a positive image. Steinberg is less concerned with the process itself than with an understanding of the process for the

purpose of swaying and molding public opinion.

Again, like Berlo, Steinberg is not so much concerned with an understanding of the techniques and the philosophy of media use as media, as he is in using the media for the ends which he predicates to be desirable in public relations. Nor is Steinberg concerned with the historical beginnings of public relations, except as these become the foundations for that which follows in establishing a positive outlook to public relations work and giving it the status of desirable professionalism.

Thus, just as Berlo orients his text to the process of communications and an analysis of the process in order to better understand it, Steinberg orients his text toward the idea of the process and better understanding of its potential as a means for creating the most suitable public image to meet the particular needs of the public relations plan.

For Steinberg, expediency and dishonesty in manipulating the media to achieve a given image goal are not the desirable ends of the public relations plan. For Steinberg, public opinion must be carefully measured to understand whether or not goals are being achieved. For Steinberg the cognitive, directive, and emotive meanings which are implicit in the communication process must be understood NOT for understanding's sake, alone, but in order to achieve the maximum benefits which proper public relations can and should engender.

In Steinberg's text, an understanding of the media and a brief survey and overview of their historical beginnings has purpose only when such information makes clear the process of public relations through the use of the media, and an understanding of the process of communications.

The author sees the media of communications utilized for "four mutually related procedures: (1) analysis, (2) interpretation, (3) implementation, and (4) action." It is the last of these procedures which Steinberg delineates as the "pragmatic" testing of the public relations campaign.

The author indicates that public relations touches all aspects of our civilization from the industrial to the governmental, from education to propaganda. Once positive ethical considerations come to dominate the public relations activities of an individual and an organization, then concepts and campaigns, hopefully always in the public interest and for the positive benefit of the individual in a free society, need to be the guidelines of the public relations counselor in his use of the mass media of communications.

● *Introduction to Mass Communications* by Emery, Ault, and Agee. The authors of this text divide their work into four main parts. Since two of the authors are a dean and a professor of journalism, respectively, and the third is an executive editor of a

group of newspapers, it is not surprising that the orientation of this text is heavily on the side of the journalistic approach to the mass media.

Although the authors do not ignore or downgrade the pervasiveness of radio, television, and films, nonetheless, the "printed word" as the dominating factor in the mass media is heavily emphasized throughout this text.

The four parts of this text concern themselves with (1) an examination of communication theory and the philosophy back of communications research, (2) a historical overview of the mass media, that does not ignore radio and television, but emphasizes the development of a free press and and the rise of the newspaper (films, magazines, and book publishing also receive historical treatment), (3) a brief examination of the mass communications as industries and a consideration of the kinds of positions in each, again heavily emphasizing positions related to journalistic aspects of the mass media, and (4) suggestions of the kinds of curricula and courses of study to be pursued for a career in the mass media, again emphasizing careers in journalism.

Of major significance in this text is the brief chapter discussing mass communications research. Here, the authors indicate the types of research usually carried on, and give a simple but telling definition of communications research. The definition:

> . . . the scientific study of the mass communications behavior of human beings, usually in current situations requiring the gathering of primary quantitative information. It also includes the study of the communicators, their media, and the content of their message.

The authors point out that this definition applies only to the type of communications research which has grown up recently, leaving the implication that other types of research are thus ignored. Clear indications of the interdisciplinary training needed to encompass the behavioristic approach to research in the mass media, and the potential of such training as a basis for future careers is briefly but carefully summarized.

The above chapter in Emery, Ault, and Agee, coupled with Chapters V, VI, and VII in J. Jeffrey Auer's *An Introduction to Research in Speech*, provides a solid basis for consideration of some research problems in the mass media which are now neglected, but which have potential for yielding some interesting insights into mass communications which neither emphasize the behavioristic nor the sociological aspects of the communications process, but which might well survey historical, literary, or message-appeal topics—topics that are as yet little explored or understood.

● *Mass Communication* by Barnouw. First published in 1956, this text by Barnouw brings insight to the historical background,

the development, and the utilization of the mass media. This insight is still timely, and his text is still a tenable and desirable point at which the beginning student may seek basic information.

Coupled with Sidney Head's *Broadcasting in America*, and Rudy Bretz's *Techniques of Television Production*, Barnouw's text is a valuable adjunct to the curriculum for training the radio and television major who will be concerned with production, programing, and (eventually) administration.

Barnouw seeks to give a simple, not too highly detailed overview of the many aspects of the mass media and puts his emphasis on television and films without ignoring radio and the print media.

Barnouw's subtitling, "The Media and Their Practice . . . ." (with emphasis on the word "practice") reveals the direction of his book. He divides his text into four major parts: (1) History, (2) Psychology, (3) Media, and (4) Sponsors.

In each of these sections he is concerned with values inherent in the communication cycle. His second section on the psychology of the mass media forms a basic introduction to Berlo's text on communication theory. It is in this section that Barnouw sets forth the basic premise that "emotion yields more readily to dramatization than (to) narration." It is in this section, too, that he sets up the communication cycle: "expectation, attention, emotion, information, idea, action," which he later examines in a workaday situation in the studio.

Among the most telling of Barnouw's contributions are his simple definitions of "entertainment," "news," "promotion," "education," and "propaganda." With these as bases, Barnouw with skill sets forth the premise, too frequently forgotten, that communication through the mass media is not a simple cycle but more frequently a series of cycles within cycles. Thus, the problem of "focusing" the audience.

In his final portion, "the Sponsors of Mass Communications," the author through his excellent use of example and explanation indicates quite clearly that there is no one medium to do a particular job of communicating. Whether the sponsor be government, industry, or an organization, the purpose of the communication, coupled with budgetary considerations should be the determinants of media usage to accomplish maximum dissemination of information, focusing of attention, and encouraging action.

Barnouw concludes his text on a note of recognition of the tensions of our time, and the potential of these tensions for good or evil, in an era of increasing mechanization. But the use of the media, he

suggests, can build bridges to understanding, as well as walls around an isolation that reaffirms our rightness.

* * *

Thus, if the mass communications media have many voices, and can convey many meanings, by the same implication they may have many faces. In these four texts, at least four of the faces of communications are manifest. Out of an understanding of their impact upon their audiences will come the meaning which we give to their use.

This photo shows the set for a hearing test demonstration. Dr. James F. Jerger (standing), the instructor, narrated.

# Teaching Speech Correction by Television

## *Specific advantages enumerated*

By **Arnold E. Aronson** and **John V. Irwin**

*Both from the University of Wisconsin. Dr. Aronson is assistant professor of speech and coordinator of TV instruction of the speech and hearing clinics. Dr. Irwin is professor of speech, director of the speech and hearing clinics, and director of the office of vocational rehabilitation's training program.*

The undergraduate curriculum in speech correction and audiology of the Department of Speech at the University of Wisconsin consists in part of such representative professional courses as Disorders of Articulation, Stuttering, Basic Procedures in Audiology, and The School and Society. Because the major professional purpose of this program is to train students to perform examination and remedial procedures with children and adults who manifest disorders of communication, it is of considerable importance that students be given sufficient opportunities to observe demonstrations that carefully exemplify speech correction and audiological techniques.

As a general practice, live clinical demonstrations either in the classroom or with the students observing through a one-way mirror, have been the most common means of providing the student with case demonstrations. These approaches have worked out reasonably well, although certain limitations should be noted:

- In order to carry out live demonstrations, it is necessary that individuals representing a variety of speech and hearing problems be available. Frequently, individuals with certain disorders are not available at the time they are needed.

- Visibility and audibility are reduced for students who are not close to the demonstrations. These

limitations are particularly important in demonstrating small areas of the head such as lips, tongue, and jaw, or the articulation of a soft-spoken child. Where writing activities, printed materials, small objects, and pictures are used by the instructor, again close inspection of the participants in the demonstration is of foremost importance.

- In selected instances, particularly with brain-injured and emotionally involved individuals, the presence of a large group of observers is distracting.
- As the speech correctionist seeks to learn more about the overall personal adjustment of the client, the presence of a large group of observers can inhibit the client in terms of the content of his verbalizations and the spontaneity with which they are produced.
- Live demonstrations have the built-in disadvantage of frequently preventing repetition of behavior often missed by students because of the speed with which it occurs.

Most educators in the field of speech correction have been aware that closed-circuit TV and kinescopes as teaching devices in situations requiring good visibility, audibility, and relative privacy have been used with success in fields other than speech correction, such as medicine and dentistry, in which visibility and privacy are also important requirements.

At the University of Wisconsin, the first formal attempt to teach a TV course in speech correction occurred in the fall of the academic year 1957-58, during which time the course Speech 25, *Correction of Speech Disorders,* originated from the studios of WHA-TV, the educational TV station of the University of Wisconsin. Although the course was made available to the general public through the facilities of WHA-TV, it was directed primarily at two audiences: a studio audience of university students and a monitor audience of university students. Every effort was made to take advantage of the TV medium, and, to this end, lectures were combined with live clinical demonstrations and such audio-visual aids as charts, slides, tape recordings, and motion pictures.

It was from this early experience with TV teaching that several distinctive features of the TV technique became apparent. It was discovered that clinical techniques of diagnosis and therapy in speech correction and audiology can be demonstrated more effectively by TV than in either the conventional class or the one-way mirror observation situation. Specific advantages were:

- The ability to obtain close-ups and a wide variety of unusual viewing angles. This feature enabled students to see clearly all procedures regardless of where they sat in the class.
- The availability of more than one camera made it possible for the instructor and director to control the attention of the viewers.
- The therapist and his clients were less disturbed by the TV cameras than by the presence of a class.

● An assistant stationed in the monitor room could intercede with remarks to students or lead discussions concerning diagnosis and therapy procedures while the session was actually in progress.

● The instructor himself could be clearly seen and distinctly heard.

In addition to serving the purpose of a regular course, an experiment was carried out in Speech 25 with the support of the Ford Foundation, the Mass Communications Research Committee of the University of Wisconsin, and WHA-TV, in which the effectiveness of teaching hearing testing techniques by filmed demonstrations was compared with the teaching effectiveness of conventional live lectures.[1] The effectiveness of both teaching techniques was evaluated by testing both the studio and monitor groups using two kinds of examinations, an objective verbal type and a filmed situational type. It was thought that the failure of previous research to show statistically significant differences in the two modes of teaching might be attributable to the fact that in most instances a verbal type examination had been given. A secondary purpose of the experiment was to demonstrate any differences between the studio and the monitor groups. It was concluded from the results that:

● Students made higher examination grades after verbal teaching when tested verbally, and after demonstration teaching when tested with a filmed, situational examination.

● No statistically significant differences were found between the studio and the monitor groups.

From these experiences certain subjective impressions were formed by the instructors. For example, it was concluded that any future course of this type ought to be conducted with the audience consisting exclusively of a monitor group, for the studio group seemed to compete with the camera for the eye contact of the instructor. Closely related to the above conclusion is the fact that the instructors found themselves less dependent upon feedback from the class than they had anticipated. Finally, we in ETV, it would seem, ought now to think of this medium not so much as a way of affording good teaching to more people, which has been stressed in the past, but ought to concentrate on intensifying the teacher's effectiveness through proper use of TV, regardless of the size of the class.

### LIP READING TAUGHT BY TV

During the same semester that the Speech 25 TV course was taught, another experiment in the teaching of speech correction and audiology by TV was being carried out. This experiment consisted of an attempt to create a TV course in lip reading and to

[1] J. V. Irwin and A. E. Aronson, *Television Teaching: Conventional Lecture Versus Highly Visualized Film Presentation.* University of Wisconsin Television Laboratory Bulletin No. 11, 1958.

measure the effectiveness of such teaching. With financial support from the Office of Vocational Rehabilitation, twenty half-hour kinescopes of specially designed lip-reading lessons were produced. Each kinescope consisted of approximately twenty minutes of actual lip-reading instruction and practice, while the remainder of the time was devoted to background information on the subject of hearing disorders. These kinescopes were shown to the public over WISC-TV Channel 3, a commercial channel, which donated the time to this project. Advantages similar to those cited above were found. These were:

- The learner has a good view of the lips and face.
- The director can control the positions of the cameras to make maximum use of close-ups and angles.
- It is possible to superimpose printed matter on the TV screen, a particularly important advantage in teaching the deaf and hard of hearing, for the basic task of the instructor is to teach the hard of hearing individual to link sounds and words with lip movements.

The speech and hearing faculty at the University of Wisconsin again utilized ETV in its teaching program during the 1958 summer session. A special institute on the *Rehabilitation of the Adult with Language and Auditory Disorders* was given, with the support of the Office of Vocational Rehabilitation and WHA-TV. The course, comprehensive and at a completely professional level—with lectures, demonstrations, and discussions on aphasia and hearing disorders—was conducted by ten of the nation's leading authorities in these two special fields. Of relevance to this article are the clinical demonstrations. The visiting lecturers performed examinations and therapy techniques with clients in the studios of WHA-TV, while the thirty students enrolled in the course observed these demonstrations on two 21" TV monitors in the Wisconsin Center building.

The use of the TV camera in teaching pure tone hearing testing illustrates a typical teaching situation in which the TV technique was of special use in the institute. For example, the examiner, faced with a client whose threshold of hearing is to be determined by observing his voluntary responses to pure tones presented to him through earphones, instructs him that each time he hears a tone he should raise his finger and lower it again when he no longer hears it. The examiner then proceeds to present the tones in a sequence of diminishing intensity. Four features of this test require very close observation by the student: the tonal intensity change in decibels as indicated on the audiometer dial; the pattern of tone interruption carried out by the examiner who presses a tone interrupter lever on the instrument panel; the degree of certainty with which the client raises and lowers his finger in response to the tone; and the marking of the audiogram, a standardized form on which the

examiner records the number of decibels hearing loss at different frequencies for each ear.

A survey taken at the end of the institute revealed virtually unanimous acceptance of the closed-circuit TV techniques used, the students indicating a strong preference for this medium. The teaching advantages of close-ups and angles, selectivity, and privacy afforded by the TV camera were manifested in this institute as they were in the Speech 25 experiment cited earlier.

In addition, advantages can be obtained when kinescopes or videotape recordings are made of such clinical demonstrations. Ten kinescopes were made of the closed-circuit TV demonstrations given during the institute. The kinescope, it was subsequently found, has the advantages of allowing the instructor to repeat sections of the clinical demonstration that have slipped past too rapidly or which he wishes to emphasize for discussion purposes, and of permitting the demonstration to be preserved for future teaching purposes. This latter feature has two special advantages. First, certain types of clinical demonstration cannot always be made when they are needed, and second, demonstrations by nationally known clinicians can be shown in order to expose the student to the best possible teaching models. Although WHA-TV's videotape recorder was not available at the time of this institute it not only would have provided the same advantages of the kinescope but also would have had the added advantage of immediate playback.

The kinescopes made during the 1958 summer institute were later compiled into a series entitled "Great Clinicians." The titles of the ten kinescopes in the series are:

1. Therapy for the Adult Stutterer—Part I.
2. Therapy for the Adult Stutterer—Part II.
3. Galvanic Skin Response Audiometry.
4. Hearing Aid Evaluation.
5. The SISI Test for Differential Diagnosis of Perceptive Deafnesss.
6. Basic Audiometric Testing.
7. Linguistic Factors in Aphasia.
8. Group Therapy for Aphasia.
9. Introductory Examination of the Aphasic.
10. The "Black Box" Test of Aphasia.

These kinescopes received very favorable acceptance when shown at the 1958 convention of the American Speech and Hearing Association. They are now being used in the teaching program at the University of Wisconsin and are in constant demand, on a rental basis, by other teaching institutions in the United States.

In the summer of 1959, a second institute, *The Rehabilitation of the Adult Stutterer,* was given at the University of Wisconsin. Again the institute was supported by the Office of Vocational Rehabilitation and TV was used to demonstrate individual and group therapy with adult stutterers.

In summary, from these primarily non-quantitative experiences with educational TV there seem to be definite indications that TV can serve an important function in the training of speech correctionists and audiologists. The camera affords the advantages of close-up shots at a variety of angles, the ability to select the content of the shots, and the freedom from distraction of the audience. The kinescope and videotape are valuable because they permit repetition of elements in the demonstration which need emphasis or clarification, and subsequent availablity of the demonstrations as needed in the teaching program.

Dr. Jon Eisenson, Queens College, (back to camera) demonstrates group aphasia therapy.

# Problems in Research in Educational Broadcasting

## *Foremost among them is financial support*

Research specialists in educational broadcasting have been slow in resolving major administrative problems in their field. Why has this been so? It

By **Gale R. Adkins**

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cannot be claimed that many of the problems are new and unfamiliar. The difficulties encountered in the administration of radio-television research are essentially the same as those to be reckoned with in many other academic fields.

Probably the initial cause of leisurely development in educational broadcasting research was a lack of urgent demand for research results. In the early 1930's educational radio research achieved a level of interest and activity which was generally maintained but not exceeded during the next twenty years. Throughout the era marked by the dominance of radio, decisions in educational broadcasting seldom waited on research. Then the attention of educators began to focus on the young and growing medium of television. As the pattern of educational television development began to take shape, new and pressing research needs became evident. The greatest demand for educational broadcasting research that has ever existed evolved with the growth of television.

The new challenge to educational broadcasting research shaped up quickly. The need to determine whether or not television could be effective in teaching led immediately to demands that research produce answers to many basic questions. As educational television has continued to expand, it has looked for guidance from experimentation, evaluation, and inquiry.

However, both commercial and educational researchers have found it impossible to keep pace with the ever-increasing quantity of unknowns relating to the broadcast media. Called upon to meet needs of unprecedented import and urgency, educational broadcasting research is now both on the spot and in the spotlight. What can be done to increase research output and effectiveness? It is logical to start by reviewing the difficulties. The purpose here is to identify major problem areas and to suggest approaches and procedures which may be of assistance in resolving some of the existing problems.

## FINANCIAL SUPPORT

Financial support is usually the foremost problem. This difficulty persists despite the fact that most colleges and universities try to the utmost limits of their resources to encourage and assist academic research. The truth is that broadcast researchers generally have been backward in formulating and promoting substantial r e s e a r c h plans and in establishing a reputation as qualified and serious investigators. Some important beachheads have been won in gaining support for educational television research. A growing public interest in television and radio as media of education, advertising, and entertainment gives the broadcast researcher a considerable advantage in his quest for funds. Capable and thorough planning combined with appropriate aggressiveness can win for broadcasting research greater financial support than it usually receives.

In broadcast project proposals, research, in competition with writing, production, talent, and equipment needs, often does not even appear as a budget item. This is likely to occur when researchers fail to help others understand that research and evaluation are vital parts of any complete project. Certainly it is possible to justify an appropriate research item in the budget for an experimental or educational undertaking. Any application for funds to support a production or broadcast teaching project should include research plans that are as carefully worked out and supported as is any other section of the proposal.

We recognize that research ordinarily ranks below instruction in its claim upon available funds. Therefore, budget items for research often have a better chance of approval if the proposed activity is closely related to the instructional work of the institution. The tendency of administrators to favor unity of purpose should be kept in mind when formulating a program of research activities. Plans for research projects should not fail to spell out the ways in which the proposed activities will serve the already accepted objectives of the institution.

Contracts and grants for research services are important potential sources of support. State associations of broadcasters, educational television commissions, departments

of education, and other public service, professional, or commercial interests may be pleased to make financial arrangements which will enable specific research undertakings. Unless the research unit is well known, assignments such as these will have to be solicited and perhaps originated by the researcher.

The Hill-Elliott Bill, which was passed by Congress in 1958, made certain funds available for research in educational broadcasting. Title VII of the law authorized the awarding of contracts and grants-in-aid "for research and experimentation involving television, radio, motion pictures and related media which may prove of value in the operation of public elementary or secondary schools or institutions of higher learning." Some other titles of the act also provided funds for specific research purposes. The New Educational Media Branch of the U. S. Office of Education was placed in charge of the four-year project. Known as the National Defense Education Act of 1958, this law provides the greatest single source of financial support that has ever become available to educational broadcasting research.

## PERSONNEL AND FACILITIES

Problems of personnel and facilities are to a large extent linked to finances. Before a college administrator is willing to approve much staff time and equipment for research, he must first be convinced that the results will be significant. This requires both belief in the importance of the particular area of research and confidence in the ability of the faculty people who propose to do the work. Usually the most effective way of selling an administration on these two points is to produce some examples of the kind of research being recommended on a larger scale.

Qualified graduate students are an important personnel resource in a research operation. Under proper supervision graduate students can serve effectively in many capacities. The better known and more favorable the research opportunities at the institution the more strongly the serious students will be attracted.

As much as possible key personnel should be freed from routine tasks in order to devote attention to planning, supervision, and original inquiry. Highly trained and experienced researchers should not invest major portions of their time in clerical and statistical routine which could be handled by less expensive employees.

A research undertaking can often be strengthened by securing the part-time services of a specialist from another department of the institution. A psychologist, statistician, economist, or an expert in test construction may be able to bring to bear upon a problem certain skills and insights which will contribute much to the results of the project. If the undertaking is of considerable magnitude, a period of released time from usual duties might be arranged. Frequently the

specialist may be interested in collaborating in the preparation of a study report or an article for publication.

### TIME AND OPPORTUNITY

Finding time for research undertakings is a major problem for most teachers and broadcasters. If research must be sandwiched into a full teaching load, the time limitation can seem overwhelming. About the only way research activities can be worked into such a schedule is to set aside a certain period each day or week for research and writing and allow nothing to take precedence.

One important aspect of opportunity for research has to do with getting in on the early planning of broadcast series, television teaching projects, closed-circuit experiments, and the like. At the outset, a portion of the original budget should be earmarked for research. Too often the need for research and evaluation is overlooked or action is postponed until too late for best results. Frequently, testing and measurement should start before the main part of the project begins to develop. Pre-testing and the evaluation of outcome are not the only functions that research can perform if planning and time permit. Selection of content, format, and procedures is more reliable when based on careful experimentation or testing. If research is dragged in as an afterthought or forced to serve at little or no expense, a definitive and professional-level result can hardly be expected.

### ORGANIZATION FOR SERVICE

Broadcasting research can often serve most effectively if it operates within the framework of an organized radio-television research unit. Functions and lines of authority differ widely among research bureaus, offices, committees, divisions, departments, and directorships. But whatever the nature of the organization, appropriate budget, personnel, facilities, and authority should be provided. Of basic importance is the fact that some one person accepts the responsibility for facilitating, assisting, and coordinating research efforts. The NAEB Seminar on Research in Educational Broadcasting formulated this recommendation in 1958: "Regardless of the limits of its resources, each educational station or programing agency should designate an individual to be responsible for the research interests of the organization."

An organized research unit has the advantages of stature and structure which increase its ability to serve. Simple convenience in making reference to a specific research unit means that the activity will become better known and more highly regarded than if it were not organized. An organization with official status is in a position to apply for a place in the institution's annual budget. It can serve as a clearinghouse for information regarding available reports and materials, new techniques and developments, and work in progress. The various research activities of students and

faculty can be correlated to result in mutual assistance and to avoid unexpected duplication of effort. Editorial help offered to staff members can both increase the output and improve the quality of publications and reports. The research director is also in a good position to know the best "markets" for publication. He can help "place" articles and can distribute reports and research results where they will serve the best purposes.

## SELECTING SIGNIFICANT RESEARCH PROBLEMS

The obligation to select timely and significant research problems represents one of the most important areas of decision for the research director. Ideally choices should be made in accordance with both local needs and more comprehensive needs which have been identified from a profession-wide viewpoint. The process of selecting research problems should involve consideration of the entire perspective of research needs. The following observations may contribute to an understanding of that perspective.

1. There is little need for further original research to determine whether or not television can teach. Research does need to delve into such questions as: What can be taught most effectively with television? What things in a television program actually produce learning? With what format or procedure can television teach a thing most effectively? How can television be combined with other educational media and materials?

2. There is still a great need for research into the learning process. Too much educational activity, certainly too much educational broadcasting, proceeds on hopes, assumptions and poorly supported theories concerning what produces learning. Of course this problem concerns educators and psychologists as much as it concerns broadcasters. But the importance is such that it deserves a concentration of attention and priority number one on the agenda of qualified researchers.

3. More depth research is needed. There has been very little intensive, exhaustive study of any nontechnical aspect of educational broadcasting. Fertile fields for intensive investigation might include the adaptation of program formats and techniques to children of various age and ability levels, effects of different classroom utilization procedures, retention patterns, the nature and stimulation of mental imagery, and the like.

4. Research should continue to probe into the potentialities of radio and recordings as teaching tools. During thirty years of educational radio, the majority of research effort went into studies of listening habits, program preferences, and opinion surveys. Television has already received more intensive and more perceptive research attention than radio enjoyed in three decades. Radio and sound recordings are not serving education as well as they could if more were known concerning the effectiveness of program techniques and utilization practices.

5. Researchers should be willing to perform demonstration research whenever the need is seen to exist. Demonstration research refers to the planning and execution of a research project when the nature of the results which will be obtained are known in advance. Frequently, attention can be focused and key people most firmly convinced if a research experiment performed on the local scene reveals the same results that have been obtained through similar research in other localities. This use of research is not to produce a contribution to original knowledge but to educate those who can best be convinced in this way. A considerable quantity of research in educational television should properly be classified as demonstration research.

## UPGRADING RESEARCH

Every person associated with radio-television research should do his share to improve the quality of work done and the reputation of broadcasting research in general. We should be objective and critical in viewing our own efforts, and we should exercise every precaution to make sure that our work is sound, thorough and accurate. Colleagues who are specialists should be called upon to assist in any procedures with which the radio-TV researcher may not feel entirely at home. Reports should make clear exactly what the research professes to be and not to be.

In an effort to gather information from a widely spread universe at minimum cost, the radio-television researcher often employs questionnaires and checklists. We know that a really good questionnaire is difficult to make up. One who is not trained in the construction of such instruments may fail to recognize a vast number of faults and weaknesses. Radio-television students, and faculty members too, are often guilty of distributing checklists and questionnaires which would make a trained researcher shudder. A few such ill-advised mailings can seriously damage the reputation of a school's radio-television area with all the stations in the state or with other important groups. Formal and informal means should be found to keep such well-intentioned but nevertheless unfortunate incidents from occurring.

The level of learned achievement attained by a profession is commonly judged by the nature and amount of scholarly publication. The radio-television area is making good progress in developing a literature. While so engaged, we will be judged by the quality of our literary output.

When about to prepare an article for publication, a researcher who suspects some weakness either in his research or in his writing ability should enlist the cooperation of a colleague. The ability to develop a significant piece of research and the ability to write interesting articles are not always present to the same degree in one person. A researcher should call

in a collaborator to share the writing work as freely as he would seek assistance of any other specialist whose services could improve the product.

The appropriate publication of research reports is a serious obligation. Carefully planned journal articles and informative study reports should be regarded as an important part of any research undertaking. Effective reporting can serve to stimulate related investigation, suggest standards of excellence, and inspire others in the field.

## SERVING THE OBJECTIVES OF RESEARCH

In a college or university situation the objectives of research are commonly felt to be threefold:

1. To contribute to human knowledge and understanding.
2. To develop or improve techniques, products, or services.
3. To instruct others in the values and techniques of research.

Research in broadcasting should be calculated to contribute as much as possible to all three objectives. The support accorded to radio-television research as an organized activity in an institution will probably depend on the extent to which these objectives are served.

In those institutions that train students for employment in radio-television, broadcast research has a chance to serve the full range of purposes. Investigations into aspects of the mass media can produce information and insights of basic significance to society, the industry, and the student. If research can penetrate into some of the vital problems which confront educational and commercial broadcasting, the areas of education, advertising, and entertainment stand to profit. Research into training needs and training effectiveness can help the institution do a better job in preparing radio-television majors. Through contact with systematic investigation, students can come to appreciate the advantages of the research approach to problem solving and can acquire a reasonable competence in practical procedures.

In order to contribute most fully to the institutional purposes of research, the results of investigation should reach those who are in a position to conduct additional research and those who might put the findings to immediate practical use. This need to communicate research experience underlines again the importance of adequate publication.

The form and content of the research report should be determined by the requirements of the expected user. If one is more interested in service than in the authorship of a forbidding-looking research paper, he will be alert to sense and respond to the need for an interpretation of results. It seems evident that something is wrong when we consider on one hand the quantity of useful research data in the radio-television area and on the other hand the number of teachers, broadcasters, administrators, public officials, and others who could profit from this information but who obviously have not been affected by it. To meet our respon-

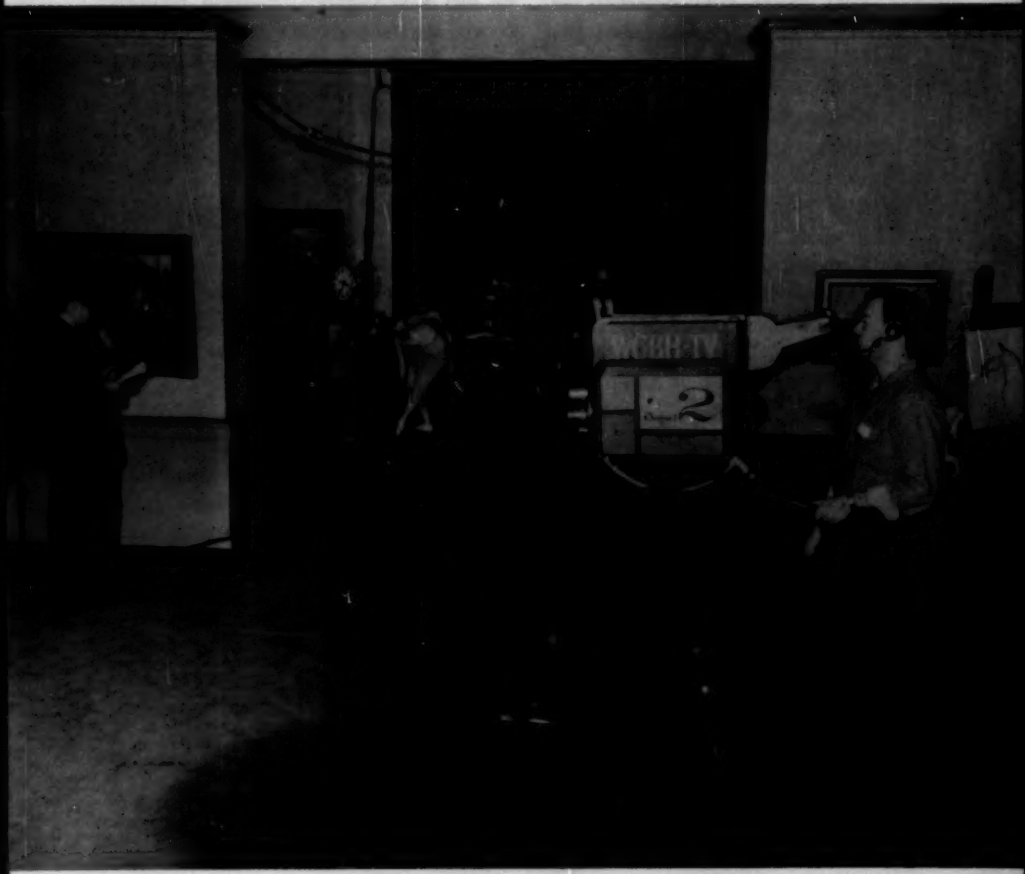
sibilities as broadcasters and educators, we should see that the results of our investigations reach the people who need that information. It is equally important that we make sure that our findings have been interpreted in a way that will make them most meaningful to the reader. In many instances, an actual follow-up should be planned to assist the teacher, broadcaster, or other consumer in the application of our research results to his particular problem. In general, we should give more deliberate attention to establishing a concept of research service.

## CONCLUSION

Several problems of major importance in the field of educational broadcasting research have been discussed briefly here. These are problems which will not solve themselves. Neither can the responsibility for their solution be delegated by those in charge of an institution's research activities. When the difficulties and weaknesses are overcome, it will occur as a result of well-calculated planning and a vigorous approach. When educational broadcasting research moves further toward professionalization, it will be because researchers themselves feel strongly enough about the importance of their work.

The future role of the mass media in our society defies the imagination. Certainly in the educational job ahead, radio and television will carry heavy responsibilities. Whatever load may develop for radio and television, a closely related responsibility will rest on broadcasting research. It is the appropriate function of research to point the way, smooth the path, and evaluate the outcomes. It is time to build a structure of broadcasting research that will be equal to the challenge.

One of the painting galleries of the Boston Museum of Fine Arts during preparations for a TV program on Degas—one of the museum's weekly "Invitation to Art" series.



# New Life for the Visual Arts

## *Boston art museum uses tv*

By **Patricia Barnard**

*TV supervisor, Boston Museum of Fine Arts. She established the museum's TV programs in 1955 and has supervised them ever since.*

For five years the Museum of Fine Arts in Boston has been the world laboratory for intensive exploration of methods of conveying enjoyment and understanding of art through television. It is the only museum in the world completely and permanently wired for television and, therefore, the only one able to take cameras right into all its galleries and bring its most precious treasures to viewers in continuously scheduled programs year after year. At the end if its fifth consecutive season last spring, the museum had produced some 600 programs, 182 of them telecast live directly from its galleries.

The Boston Museum was by no means the first to experiment with television, but while other institutions have carried on affairs with the new medium ranging from shy flirtation to extended liaison, this is the only one to marry the witch and take her for better or worse into the bosom of its galleries. It has invested a fortune in technical facilities in evidence of faith in the permanence of the relationship. Behind twenty power outlets installed strategically throughout the museum's three acres of exhibition space, 5,000 feet of cable snake through the halls and terminate in a basement control room. This control room is linked, in turn, by cable to master control at the studios of educational station WGBH-TV.

All this represented an investment of $100,000 before the bills for production and salaries began to come in. The museum now has a full-time TV staff of three: the television supervisor, who also acts as executive producer; an associate producer, and the "star" of the weekly feature show — the one

originating from the galleries. Arrangements with speakers for other series are made on a part-time basis and scripts for certain programs are written by several members of the division of education. But it may be said that the entire staff of the museum is involved: the curators who provide both objects and scholarly counsel, the laboratory experts who advise about precautions to protect the works of art from excessive heat and light, the utility crew, painters and carpenters, and of course, the director of the museum and the head of the division of education, without whose enthusiastic support the programs could not exist.

A variety of programs produced by the museum are on the air, in prime evening time, from three to five days a week from October through May. No one program can please all of the people all of the time, and so a balanced diet of several series running simultaneously is worked out each season. In addition to the featured weekly visit to the galleries, programs telecast from the WGBH studios have included creative art courses in drawing, print making, and sculpture taught by members of the faculty of the museum school; "Images," a series using slides and photographs of works of art combined with background narration and music to develop its varied themes; and "Adventures in Art" for children.

Such a commitment to television would have been impossible without the assured outlet for continuous programing which only a noncommercial educational station provides. The museum does work occasionally with local commercial stations, but its regularly scheduled programs are produced in association with WGBH-TV, one of the most professional of some fifty of these educational stations already in operation from coast to coast. It may be at least in part because the Boston Art Museum has such an outlet at its disposal and New York museums have not that the former has become the national center for production of art programs.

In their initial live showing, the museum's programs are received by WGBH viewers within a sixty-mile radius of Boston, and in New Hampshire through the link with WENH in Durham—first step toward a New England educational television network. Many of the programs are recorded for far wider distribution. Fifteen videotapes selected from this year's feature program, "Invitation to Art," were shown in New York last summer by WNBC-TV, Channel 4—Sunday mornings at 9:30, June 5 through September 11. These deal with great artists, past and present, from Rubens and Rembrandt through the Impressionists and Post-Impressionists to Edvard Munch and Paul Klee. The last few programs in the series are interviews with living masters who have exerted a powerful influence upon the art of today—such men as architect Walter Gropius, painter Josef Albers, and sculptor Jacques Lipchitz. Fifteen programs from the 1958-59 "Invitation

to Art" series were kinescoped and are being distributed this fall by the National Educational Television and Radio Center. These explore man and the world around him through the eyes of artists of many periods and cultures. They deal with the cycle of man from childhood to old age, the society in which man lives in its many aspects from fashion to war, and the world of nature, hostile and benign.

"Invitation to Art" is written and presented by Brian O'Doherty of the museum's education staff, a witty and charming young Irishman over whom Bostonians, both proper and improper, have been losing their heads and hearts for two years. Trained in medicine as well as in art, Dr. O'Doherty draws upon an unusually broad background in preparing his material. His warmly human approach, emphasizing the fundamental and universal emotions underlying all great art, has been described as a rediscovery in visual terms of the art of the personal essay of the eighteenth century. It has been extraordinarily successful, attracting and holding a wide audience, many members of which would normally be allergic to the call letters of an educational station. One devoted fan wrote: "The only programs that interest me are Ed Sullivan, *Brian O'Doherty*, and Lawrence Welk"!

The museum's major production, currently called "Invitation to Art," has changed format, "talent," and title from year to year. It has experimented with many approaches — the single-star-personality format, the host-plus-guest-specialists format, the panel discussion, and the quiz show. It has featured dancing, music, and demonstrations of art techniques when these were genuinely related to the works of art under consideration. But through all its changes it has been conceived consistently as a *show* — that is as cultural entertainment rather than academic instruction. It has always aimed to rescue art from its ivory tower and restore it to its rightful place as an expression of human experience and emotion.

The first full season, 1955-56, brought the television audience into the galleries for weekly full-hour programs presenting highlights of the collections and giving an understanding of their original significance. A typical show was devoted to Hindu sculpture, explained by a distinguished Indian scholar and oriented emotionally by religious dances and music performed before the statues by young Hindu students from local colleges. Master of ceremonies for this series was Richard B. K. McLanathan, who is now director of the Munson - Williams - Proctor Institute in Utica, New York.

The second season related masterpieces of literature and masterpieces of art, again in sixty-minute programs without commercials. For example, Professor Howard Mumford Jones of Harvard University appeared as a guest one evening, relating novels by James Fenimore

Cooper and paintings of the opening up of the American West. Ballads sung to guitar accompaniment from an improvised barge helped to recreate the atmosphere of the period.

The third year offered a double feature: "The Vision of Art," a survey course in art history based upon objects in the museum's collections and designed to encourage enjoyment and understanding through emphasis on the art of seeing, and "The Intent of Art," a special guest series of eight monthly programs explaining the purposes underlying works of art, presented by Bartlett H. Hayes, Jr., director of the Addison Gallery of American Art. Because it had the continuity, although not the formality, of a course, "The Vision of Art" provided some gauge of audience participation. No credit was offered, yet 324 television students "registered" by sending in one dollar for a portfolio of resumés of each lesson, and 120 came to the museum to a party to meet their teacher, Barbara Novak. Nearly 400 viewers of the 1958-59 and 1959-60 "Invitation to Art" series came to each of two televised panel art-quiz shows staged in the museum auditorium so that a studio audience could be accommodated. According to the mysteries of TV ratings, this response indicates a viewing audience in six figures.

Television seems a logical and inevitable extension of the educational activities of all major museums. It knocks down the walls and takes the collections into the homes of more people in one evening than come to the galleries in months. And it inspires many to come in who just haven't gotten around to it. In time it can bring a tremendous increase in museum attendance everywhere and encourage wider and wider community interest and support. After five years of intensive experience, the Boston Museum of Fine Arts is convinced that this is an opportunity for a cultural service that is a clear and present challenge to all museums.

# Have We Learned Our Lesson?

## *Author outlines how to use technological aids to education*

Three decades ago we were in the midst of heated discussion on the potential role of radio in education. Speeches were made and articles written on various sides of the subject.

Some feared that the monster of radio might replace the teacher in the classroom. Others discussed the danger of introducing a technical device into the teacher-pupil relationship, thus making it less personal. Administrators said radio in education might be all right, but found it difficult to schedule the broadcasts with existing classes. Superintendents and boards of education were concerned about the cost of equipping every classroom with radio or recording devices. Educational philosophers warned against developing national networks for teaching all the classrooms in the country at the same time. And there were many other objections raised against this electronic product of the twentieth century.

On the other side of the argument, some saw in radio an opportunity to bring to all students of the country the best teachers that could be found. Current events would become alive and interesting as on-the-spot reports were made available to students even in far-removed and isolated sections of the country. A few brave souls even suggested that the best teachers in a school might become radio teachers so that all of the students could benefit from contact with these superior minds.

By J. Lloyd Trump

*Associate secretary, National Association of Secondary-School Principals, and director, Commission on Staff Utilization. Formerly professor of education at the University of Illinois.*

Principals and supervisors saw possibilities for in-service growth among teachers using the radio as a means of facilitating meetings and the exchange of ideas. Radio was used to save the time of teachers by making announcements and giving instructions for tests from a central place, rather than doing these things repetitiously in every classroom. Imaginative writers and speakers suggested many other things that this form of modern technology might bring to education.

What happened as a result of all these discussions? Radio never really got into the classrooms of this country. Yes, there were students who occasionally listened to radio broadcasts — or produced some themselves. From time to time certain programs were heard by comparatively large numbers, *e.g.*, the Walter Damrosch Music Appreciation Series. But if one considers radio in the same light as textbooks, workbooks, or the physically present spoken voice of a teacher, as these matters now are integral parts of everyday education, one must conclude that radio never got into the fabric of American education.

Lest those interested in radio, recording, and television, become discouraged at this forlorn report —which is well known to all persons concerned about the use of these media—we should hasten to add that many good proposals of educators and others during the twentieth century have also failed to become an essential feature of American education. The following partial list merely suggests some other movements that had some effect but never became accepted the length and breadth of the country on a regular basis: core curriculum, common learnings, consumer education, aviation education, global geography, films, slides, and most of the other audio-visual aids to instruction. Yes, each of these had an influence on education, but none achieved the status of the conventional subjects, textbooks, blackboards and chalk, and other avenues to knowledge that have been used in schools for scores of years. Why is it so difficult to introduce new ideas or modern technology into the educational program? Are there constructive solutions to the problems?

Basic changes in the structure of American education are needed if modern technology and new approaches to the curriculum are to be introduced. Required are more flexibility in scheduling students and teachers, better utilization of the professional competencies of the staff, and more use of technical aids to learning.

## FLEXIBLE SCHEDULES

Flexibility in scheduling requires that students spend their time differently than they do in the conventional school of today. Today's school divides the student's time, and the content of subject matter, into standard-sized periods, each meeting typically 5 days a week for 18 to 36 weeks per year. All

content is usually taught in standard classes, the only exception often being a daily period or more spent by students in a large study hall.

The life of students in school may be characterized as a life of togetherness. Students are not expected, nor are they afforded the opportunity, to work individually, or in very small groups, for extended periods of time, in laboratories, libraries, shops, cubicles, or in other learning resources centers.

Student dicussion in groups of twelve to fifteen is logistically impossible. There are neither enough teachers nor enough spaces to go around. Showing films, viewing television, listening to radio or recordings, viewing demonstrations, and listening to lecture-presentations—all take place in the standard-sized group even though this results in unnecessary repetition on the part of teachers.

Students should be scheduled in groups an average of about fifteen hours per week. Some individuals should be scheduled in groups more hours and some fewer hours per week. The size of these groups should vary with the purposes and content of instruction. Part of the time students may be scheduled in groups of 100, 200, or even much larger for such purposes as the airborne television project. At other times the groups should be limited to twelve to fifteen students when discussion is the important activity. A greater portion of the student's time should be scheduled in individual activities in a variety of learning resource centers.

Redeployment of students makes it easier to assemble them in relatively large groups to listen to radio and television. More time scheduled for individual work makes possible greater flexibility in the use of teaching machines and other technological aids to learning. New subjects and ideas can be introduced easier into the curriculum because no longer does each of these new approaches have to be scheduled 50 minutes per day, five days per week, 18 or 36 weeks a year.

## BETTER USE OF COMPETENCIES

The second major need in improving the quality of education is better use of the professional competencies of teachers. One of the basic reasons why teachers have not used radio, television, visual aids, and other newer approaches in teaching, is that they have lacked the time and energy to prepare for the use of these media. They have not been able to reorganize course content and plan newer approaches to teaching. A professional teacher should not be scheduled with groups of students more than fifteen hours per week. That would leave time for keeping up to date, planning better approaches to instruction, developing new instructional materials, conferring with colleagues, and helping students on an individual basis when needed.

The class load of teachers cannot logistically be reduced to fifteen hours per week without basic changes in the use of competencies. Probably as much as one-third of what teachers now spend their time doing could be done as well, and in some instances better, by clerks, instruction assistants, and general aids. Probably another third or more of what teachers now do could be done as effectively, and probably more effectively, by one or more automatic teaching devices. Use of personal and technical assistants would leave for teachers those tasks which professional persons must do to improve the quality of learning for students. The changes proposed do not mean that teachers would work less than they do now, but they would work at tasks that are professionally more important.

## PAYING FOR TECHNOLOGY

Suppose we agree that more use of technology is needed, and that by changes in scheduling, staffing patterns, and the use of teacher abilities, the use of technology is logistically possible. The question then arises, who is going to pay for these technological marvels? Teachers today are probably the most undercapitalized professional group.

What has happened to the budget of your school district during the past thirty years? How much more money is being spent today to educate each student than was spent thirty years ago? How much of this increase has gone into teachers' salaries? How much of the increase has gone into construction of new buildings or the remodeling of existing ones? How much of the money has gone into producing such added services as counseling, health, and testing? What per cent of the increase has been used to provide teachers with improved tools to aid them in teaching?

Most teachers have very few additional tools today to aid them in their trade than they had thirty years ago. Textbooks are somewhat more attractive and more readable. Some blackboards have changed their color. Some chalk is not quite as dusty as it was. A few more motion picture projectors, tape recorders, overhead projectors, and other aids to instruction have been purchased. But the proportionate amount of the school budget spent for tools remains very low and has not increased dramatically in thirty years in most schools.

Quality education will cost *more* rather than *less.* In the meantime, however, every school district should consider whether there are uneconomic procedures being followed in the expenditure of school funds. Are teachers being paid teachers' salaries to do the work of clerks and watchmen? Does the provision of standard-size classrooms mean that some rooms are unnecessarily large for small-group discussion and others so small as to force unnecessary repetition in the showing of films, demonstrations, and the like? Does

an inflexible schedule prevent students from making the fullest possible use of laboratories, shops, libraries, and other specialized learning resources areas? A number of other questions of a comparable nature could be raised for study in local school systems.

The quality of education in this country has steadily improved since the systematic study of the science of education was started about 1890. The quality of education inevitably will continue to improve so that schools in 1970 or the year 2000 will be somewhat better than they are today, even if we continue to exercise half-hearted attempts to improve within the existing framework of organization. But if we want dramatic improvement in the quality of education — if we want really to take advantage of all that modern technology and the promises of the future offer — basic changes in such matters as flexible scheduling, staffing patterns, and use of technology are essential. Those who are especially related to modern technology can and must take the leadership in suggesting new approaches in the school districts where they live and work.

The National Association of Secondary-School Principals has recently published two booklets, *Images of the Future — A New Approach to the Secondary School,* and *New Directions to Quality Education — The Secondary School Tomorrow.* Both are available without charge by writing the NASSP, 1201 Sixteenth Street, N. W., Washington 6, D. C. A one-hour film, *And No Bells Ring,* is also available for a $3.00 rental fee, or for use without charge on television (recorded on videotape).

The brochures and films explain in greater detail the ideas presented here. These ideas have grown from experiments conducted in about a hundred schools during the past four years by the NASSP's Commission on the Experimental Study of the Utilization of the Staff in the Secondary School. The studies are described in the January, 1958, 1959, 1960, and 1961 (now being written) *Bulletins* of the association.

The author has directed the project on staff utilization for these past four years. Readers are invited to raise questions or exchange ideas.

Have we learned our lesson? Are we willing to face up to factors which in the past have made difficult the use of technology in education? Who will mount the revolution?

# Revolution by Radio

## *How radio helped Castro*

When the existence of Fidel Castro's rebel movement in the Sierra Maestra mountains of Cuba was revealed by the *New York Sunday Times* on February 24, 1957, the news was least likely to reach the very country from which it came. President Fulgencio Batista had imposed rigid censorship of press and radio throughout the island the month before. How could Cuba's six million Spanish-speaking people learn of this growing resistance to Batista's regime as reported in a far-off New York newspaper?

By **J. David Lewis**

*TV production director and instructor in speech, University of Oregon. Previously production manager, KETC, St. Louis, and news director, WTTV, Bloomington-Indianapolis, Indiana.*

The only answer was clandestine radio: hidden, illegal, but able to send its messages almost anywhere. The anti-Batista forces began to use this one chink in the armor of censorship. Furtive and feeble, its first broadcasts were reported by South American capitals, as it demanded President Batista's resignation in September of 1957.[1] The day after this report, COCQ in Havana broadcast a police announcement that a clandestine radio transmitter had been seized in Mariano, a suburb of Havana. The transmitter was said to have been used to broadcast programs which were alleged to come from the Sierra Maestra.

Another clandestine station calling itself the Voice of the Revolution was heard on September 26. It stated repeatedly that it was the 296th day since the arrival of Fidel Castro, and the beginning of the struggle for freedom, and announced that it was broadcasting "from a piece of free Cuban land." It exhorted the soldiers to desert and appealed to the workers to join a general strike.

This format was continued by the Voice of the Revolution in

[1] All information and quotations from radio broadcasts have been taken from monitoring service reports unless otherwise noted.

fairly regular broadcasts for nearly a month. Refinements such as the playing of the Cuban national anthem were added.

Near the end of November, warnings and appeals to join in a general strike in Havana on November 27 were broadcast by the Voice of the Revolution. However, that date passed uneventfully. November 28 brought a bit of byplay as an unidentified station followed the clandestine station's sign-off, saying "Long live September 14, Long live Batista."

A variation was heard in December. Near the end of a broadcast which followed the usual format, the announcer mentioned that FBI agents in the United States had frustrated an expedition designed to send arms and munitions to Castro. The announcer said:

> Why, Mr. Agents? Why then did you not arrest Mr. Eisenhower when, following the Moncado incident, he sent tanks, trucks, and planes to Batista to continue defending the "democracy," that is, to continue assassinating Cubans.

Yet, a few days later, the station—while criticizing the pro-Batista actions of some United States generals—said that since the arrival of Ambassador Smith in Havana, the policy of the United States had been one of "strict neutrality" in the difficult Cuban situation.

The cause of this ambiguity in the broadcasts of the clandestine radio may lie in the heterogeneous nature of the revolutionary movement. The Voice of the Revolution presented a document outlining what the new regime would do once it was in power. The document was signed by representatives of six revolutionary organizations. On December 19, the establishment of the Junta of Cuban Liberation was annnounced, resulting from the union of seven organizations and parties. It is notable Fidel Castro's July 26 Movement was only one of the signatories, and Castro is not even mentioned. There seemed to be no single authentic voice for the revolution.

Up to this time, Fidel Castro had not been heard on Cuban radio. The first station apparently had pretended to broadcast from the Sierra Maestra stronghold of the July 26 Movement; the Voice of the Revolution craftily said only that it broadcast from "a piece of free Cuban land." But on February 24, at a Cuban rally in New York City, it was announced that a new clandestine radio station would be inaugurated in the mountains of eastern Cuba that day, with Fidel Castro speaking.

Whether or not the new station went on the air on schedule is not reported, but the need for it was apparent. Conflicting claims of Castro's views were presented by politicians and the press. Finally, on March 4, a letter from Castro reported over COCQ in Havana, said that his first condition for peace was that Cuban newsmen be allowed to go to the Sierra Maestra. He noted the right of the people to be informed

and asked papers and radio stations to send a mission of newsmen to the area. It was said that Castro believed that the lack of information was responsible for the confusion that contributed so much to preventing any solution.

### RADIO REBELDE BEGINS

It was about this time that the first report of the station in the Sierra Maestra is found. Called "Radio Rebelde," the new clandestine station broadcast on March 6 the protest of several U. S. Congressmen against the State Department policy of, as they charged, sending arms to dictator Batista under the guise of continental defense. And even as Radio Rebelde began to make itself heard, yet another voice was added to the roster of clandestine stations. Radio Cuba Libre de La O. A. broadcast on March 8 and 11. Primarily of the Organizacion Autentica, it also stressed its alliance with the July 26 Movement and the Revolutionary Directorate.

An odd departure was noted in the broadcast of Radio Rebelde, "La Voz de le Sierra Maestra," on April 1. It announced that:

> We have been forced to interrupt our broadcast because a North American airplane piloted by Cuban pilots is flying over this camp and dropping deadly napal bombs on this undefended civilian town. This is another crime of the dictatorship against the people. We shall resume our broadcast in a few moments.

Then there followed a noise like the motor of an airplane and a voice like the pilot of the airplane talking to his base. "Alvaro and I are having trouble transmitting. I have the town in sight. I see the first unarmed people on the ground." There was then a break in the broadcast for about one and a half minutes, after which Radio Rebelde resumed broadcasting.

In early April, Radio Cuba Libre and Radio FON joined Radio Rebelde in giving detailed instructions for a general strike and calling for the paralyzing of telegraph and telephone communications. This rebel radio activity must have had some effect, for the Cuban government ordered all amateur radio stations off the air during the "state of national emergency."[2] Perhaps it would have been well for the rebels if they had restricted their broadcasting, as the strike was a failure for the most part. One rebel said, "No strike was ever called." Two groups of youths had forced the CMQ and Progresso radio stations to broadcast a strike call, and he said, "This was a mistake, because they had never received the official notice." Rebel supporters in the city were thrown into confusion by the radio announcements because they were not the strike call that had previously been agreed upon.[3]

Yet these statements sound much like excuses, for Radio Rebelde,

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[2] *New York Times*, April 11, 1958, p. 8.
[3] *New York Sunday Times*, April 13, 1958, p. 1.

Castro's own station in the Sierra Maestra, had broadcast:

> Soldiers, the final hour of the dictatorship is approaching. The general revolutionary strike has been declared . . . . the entire country is up in arms, and the unions are going on strike by the dozen . . . People of Cuba, a general strike has been called.

Another dimension was added to the radio rebellion on April 12 as YVKM of Caracas, Venezuela, announced that:

> Radio Continente, the most powerful radio station in Venezuela, is in permanent contact with the three rebel radio stations of the sister republic of Cuba, and as soon as an important report is received, we will broadcast it to you. Remain tuned to our broadcasts.

Radio Rebelde began to assume a more distinct character about this time with a broadcast of a speech by Castro himself. He said:

> I have marched for days and nights from the zone of operations for column one, which I commanded, to keep this appointment with the rebel radio. It was hard for me to leave my men, but speaking to the people is also a duty.
>
> One of the most cynical expressions of dictatorship is its absolute control over the press and other means of expression. Censorship is used to make the people believe what promotes the safety of their oppressors. Tyranny suppresses the truth and spreads lies. The press and radio, which should be the people's organs of expression, are converted into vehicles of oppression. Shall the people believe the criminals and traitors who suppressed the constitution, individual liberties, and freedom of the press?

The speech continued with denunciations of the army, assurances of increasing strength, appeals for help from the democratic governments of America, and promise of continued resistance. He closed with the words: "To the people of Cuba the assurance that this fortress will never be conquered, and our oath that the nation will be free or the last rebel will give his life."

It was an effective speech, and may have marked a new policy of the July 26 Movement to capitalize on the popularity of its leader. On April 18, Radio Rebelde announced that new equipment was to be installed, and that when broadcasting resumed in a few days, Radio Rebelde would transmit simultaneously on the 20 and 40 meter bands and that Fidel Castro would speak every Sunday. The day before this announcement, Radio Rebelde had been subjected to heavy jamming and its broadcasts followed on the same frequency by the "Voice of Reason." This station maintained that Castro was a Communist. It broadcast anti-Castro propaganda for about ten minutes before signing off with the promise to be on the air again.

By May 7, Radio Rebelde was back on the air with various news reports of the progress of the rebellion. A campaign for the affections of the fighting men was begun by both sides, with Radio Rebelde broadcasting an interview with a deserting Cuban soldier and COCQ, Havana, broadcasting Batista's invitation to all

rebels to surrender with a guarantee of personal safety. Radio Rebelde ridiculed Batista's offer made "just when the position of the dictatorship is most precarious." The following day COBC Havana broadcast Batista's further orders to "maintain absolute secrecy about the identity of insurrectionists who surrender."

Finally Batista's forces mounted their long-expected attack and apparently met with some success, as Radio Rebelde broadcast an appeal on May 31:

> Cuban doctors, come to the Sierra Maestra. The enemy offensive has begun along a 200-mile front . . . We need doctors urgently, especially surgeons. Each rebel column needs at least two doctors, and our columns are numerous. Doctor, you can save the lives of many freedom fighters. Come to the Sierra Maestra, Cuban doctors.

Yet, two days later, the rebel station said, "The army general staff goes on slaughtering rebels in its military communiques. The truth is that since the offensive began we have lost one man killed and six wounded."

#### RADIO CONTINENTE HELPS

An important new phase in the history of Radio Rebelde began on June 17, when it broadcast this news item:

> Radio Continente of Caracas began spontaneously re-broadcasting Radio Rebelde's programs. When Cubans cannot hear Radio Rebelde, perhaps because of jamming, they tune in Radio Continente for our news. That Radio is too powerful to be jammed, and it cannot be reached by Batista's censorship or police.

The broadcast went on to list seven other Latin-American stations that would be or already were rebroadcasting its programs. It went on to say:

> This radio network of freedom has been formed solely from a feeling of human solidarity, the feeling of noble hearts for a just cause. What the dictator Batista could never have achieved has been obtained by this modest station, which voices the sorrow of our people and the heroism of our soldiers. Now the deeds of each soldier can be known to millions of listeners in the sister nations of Latin America. This is a fine contribution to our cause, more valuable to us than any other.

This statement by Radio Rebelde shows the importance placed by the July 26 Movement upon broadcasting and the ability it gives to express one's point of view to the world at large. In evaluating the actions of Castro's organization, the use made of them for propaganda purposes must be taken into account.

Such an incident was the kidnapping of United States servicemen and civilians at the end of June. Radio Rebelde disclaimed any knowledge of the incident which was carried out in Raul Castro's area of command. It then commented on the incident in this manner:

> It is possible that the Americans gave direct military aid to the forces of tyranny and were detained for that reason. The Cuban rebel territory has its laws and anyone violating them is judged the same as the U.S. Government judges those Cubans who carry out any activity in its territory which is considered unlawful . . . However, it is also possible, and here

we can only guess, that he had the curious idea of inviting these officials to see for themselves the effect of the bombs and planes which the U.S. Government has been sending to Batista's tyrannical government.

On July 3, a message from Fidel Castro was broadcast to Raul Castro by Rebelde saying, "If it is true that these U.S. citizens are being held by rebel forces, their release will be ordered." The message went on to detail "the delivery of 300 rockets from the American naval base of Caimanera to Batista's planes" but said, "I believe that these American citizens cannot be blamed for the shipment of bombs to Batista by the government of their country."

Two new approaches to Cuban and world sympathy were begun by Radio Rebelde near the end of July. On the 24th, it reported a ten-day battle with one of Batista's battalions:

> The enemy battalion surrendered on July 21, when it could no longer fight. The men were hungry and thirsty and no reinforcements had been received. The surrender conditions were honorable: Officers were permitted to keep their guns and the soldiers soon will be released. Only the commander will be held as a prisoner of war. Radio Rebelde adds that the captured battalion was one of Cuba's best and that it fought bravely for some ten days while awaiting reinforcements which the government could not get to it.

A few days later Radio Rebelde stated that 253 prisoners of war, including 53 wounded, had been turned over to the International Red Cross and the Cuban Red Cross. The following day, in a program commemorating the fifth anniversary of the formation of the July 26 Movement, Radio Rebelde paid tribute to the men who had fallen on both sides and noted that all were Cubans. Thus the ideas of surrender with honor and rebel humanity and patriotism were stressed.

Fidel Castro was heard again on Radio Rebelde on August 19 and 20. Recalling his speech of four months before, after the failure of the April strike, he detailed the subsequent progress of the revolution. The themes were heroism and humanity by the rebels, criminality and stupidity by the enemy. "War is not merely a matter of guns, bullets, cannons, and planes," he said. "Perhaps the belief that it is has been the cause of the failure of the forces of tyranny." He suggested that the state of the army made a coup d'etat possible and laid down conditions under which the rebel army would consider peace with the army. He ended with:

> The revolution exists because tyranny exists. The revolution exists because injustice exists. The revolution exists and will continue to exist while any cloud threatens our rights and our liberty.

Batista, usually silent to any rebel statements, must have been made uneasy by this speech, for on the 25th anniversary of his own rise to power in the so-called Sergeant's Revolt, he declared that the democratic solution to Cuba's internal problems did not lie in carrying out coups and excesses which

would prevent the holding of the general elections scheduled for November 3.

This election became the next target for Radio Rebelde. It detailed a reputed election deal planned by three candidates under Batista's direction, one of them to be given the winning share of votes.

> Batista has already selected the candidates who are to win. They include an allotted number of opposition candidates, for whom the required number of registration cards has been supplied. . . . Rivero Aguero seems to have the nod for the presidency, although Marquez Sterling ingenuously thinks that he will be rewarded with the post by Batista for his cooperation in making the election look real.

During these pre-election days, Radio Rebelde announced that its transmitters were to be increased in power. They would be heard throughout Cuba on short wave, over Radio Continente in Venezuela, and over the freedom network. But the following day, the Venezuelan government said that Cuban sympathizers of Fidel Castro would not be able to continue their nightly radio programs "in view of the fact that Venezuela maintains relations with the government of President Fulgencio Batista."[4]

With the increased power of Radio Rebelde, it is doubtful that the course of the revolution was much impeded by the loss of Radio Continente's aid. The November elections were being criticized as illegal by the Latin-American press, and candidate Marquez Sterling, defeated by Rivero Aguero, said there was no doubt that the presidential election had been fraudulent and that the Cuban internal situation would become considerably worse.

November 13 brought Radio Rebelde on the air to hail the desertion of two complete government platoons. Detailed instructions to rebel troops were given, including procedures for handling surrendering government troops. Instructions were also given to the people for cooperation with the rebel army.

> At the decisive moments which are approaching, the people must give the highest proofs of civil sense, patriotism, and a sense of order so that later no dishonorable accusation can be made against our revolution which, because it is the highest conquest of the Cuban nation and the most extraordinary proof of the people's desire for peace and of their dignity must suffer no blemish.

This broadcast of the impending triumph was in Fidel Castro's voice.

Events moved even faster than anticipated. Early on January 1, Batista announced to his aides that he was resigning to prevent further bloodshed. He named a junta headed by General Eulogio Cantillo to run the government. Cantillo appointed Dr. Carlo Piedra, the oldest member of the Supreme Court, as Provisional President. Then Batista fled to sanctuary in the Dominican Republic.

Dr. Piedra ordered a cease fire. But with victory at hand, Castro was in no mood to bargain. He denounced the new regime as a Batista creation, ordered a general

[4] *New York Times*, October 19, 1958, p. 22.

strike and declared "the war will continue."[5]

Radio Rebelde was on the air on January 2 with a proclamation by Fidel Castro naming Santiago de Cuba the provisional capital of the republic and describing the events which led to the city's fall into rebel hands. He also stated that "personally power does not interest me" during a speech of one and and one-half hours.

### RADIO REBELDE ENDS

This seems to be the last broadcast of Radio Rebelde. The day before, COBC Havana announced that it had entered into a hookup with Radio Rebelde and was now part of the network of all free stations in Cuba. Following this, on January 2, twenty-three radio stations and three television stations were listed in the network, to be joined by five more later the same day. From that time on, the powerful transmitters of commercial radio and television stations carried the broadcasts of the revolutionary government throughout the island.

Radio Rebelde had come to the end of a long journey. Its progress from a weak and fitful voice to the "parent station" of an all-Cuban network had been erratic. Its early days had seen clumsy tricks and over-enthusiastic propagandizing. Its trump card seemed to be the personality of Fidel Castro. Indeed, that was its major purpose: to assure the Cuban people of the reality of the revolutionary movement. Second to this was the coordination of the rebel activities. When this task was taken up by other clandestine stations, the unifying effect was lost, but the revolutionaries eventually learned this lesson, then the other "Voices" were stilled.

The constant theme of freedom ran through the broadcasts of Radio Rebelde: freedom for the people, freedom of information. The government of Batista represented tyranny and censorship; the United States government was sometimes accused of supporting such policies. But Radio Rebelde was always ready to point out inconsistencies and give moral lessons. It often asserted that all might be brought to rights if newspapermen had free access to the Sierra Maestra.

Yet on November 24, 1959—less than a year after the success of the revolution against tyranny and injustice—the Inter-American Press Association charged "increasing censorship by terror" in Cuba and said there had been direct attacks by the highest officials of the Cuban government against newspapers.[6]

Fidel Castro himself, who sounded the call to freedom over Radio Rebelde, now said in a speech on November 28, "We must be aware of the fact that international

[5] *New York Sunday Times*, January 4, 1959, Sec. IV, p. 1.

[6] *New York Times*, November 24, 1959, p. 15.

opinion is molded by news agencies, which have covered with mud the prestige of the Cuban revolution." He spoke over COCQ from the steps of Havana University as he said:

> I know the people want measures taken against enemies of the revolution who say, do, and write everything that displeases them. Naturally we have a great responsibility. How long can they be permitted to continue their continuous campaigns?

A method short of proclaimed censorship, but almost as effective, seemed to be in operation.

But in analyzing the actions of Cuba's revolutionary movement and its uses and abuses of broadcasting and the press, it is necessary to keep within the context of the Cuban culture. It may be that Castro's regime is no new and alarming development. To be sure, the July 26 Movement was a revolution, but Batista came into power through revolution also. This has been the pattern throughout most of Latin America for many years.

Dr. Frank Tannenbaum, Professor of Latin-American History at Columbia University, assesses the situation in this way:

> Fidel Castro claims a moral sanction for his power. He destroyed the tyrant and is now bringing justice and liberty to the people. As long as the people believe that his intent is good, that his purposes are to protect and help them, then he will continue to be a national hero, a very prince returned to rule with divine power. He is the King come to office again.
>
> His difficulty will arise if and when his actions become suspect as being motivated by personal ends, when he becomes suspicious, arbitrary, and tyrannical.
>
> When the people become fearful and no longer trust him, should that misfortune befall him, he will be driven to become a tyrant . . .[7]

In the history of Radio Rebelde can be seen part of this pattern. Through its broadcasts Fidel Castro revealed Batista as motivated by personal ends, as cruel and tyrannical. He built his own image as humanitarian and patriotic: the people's champion. Today he seeks to maintain that image through radio and television. At the same time, counter-revolutionary groups are operating in the same Sierra Maestra that cradled the July 26 Movement. It remains to be seen if a new Radio Rebelde will start the process over again.

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[7] Frank Tannenbaum, "The Political Dilemma in Latin America," *Foreign Affairs*, 38:3 (April 1960), pp. 514-515.

# An Annotated Bibliography on TV Studio Operations

By **James A. Fellows** and **Charles M. Woodliff**

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It is always difficult to compile a bibliography which has cited every possible resource in a professional area. The works which are listed here do not constitute the total number of books that have been published about television studio operations. They do represent, however, books which will be most helpful to the student of studio operations.

In addition to books as a resource, the teacher and/or student should also consider the variety of journals which contain articles pertinent to this field. *The Journal of Broadcasting, The Journal of the S.M.P.T.E.,* the *N.A.E.B. Journal, Audio-Visual Instruction, Audio-Visual Communication Review, Broadcasting,* and *Broadcast News* publish articles related to television production on a regular basis. An address list of these organizations appears at the end of the bibliography.

Many books which have been written about film and radio production can be important resources for the television director and his crew. Because they are not entirely concerned with specific problems of television work they have not been listed specifically in this summary of the literature.

Suppliers of television equipment also provide an important resource of up-to-date information. Specific companies and addresses are listed after the general bibliography section and they are listed by numbers in applicable specific sections.

## GENERAL BIBLIOGRAPHY

Abbot, Waldo, and Richard L. Rider, *Handbook of Broadcasting,* New York: Harper Brothers, 1957.

Adams, C., *Producing and Directing for Television,* New York: Henry Holt and Company, 1953.

Alton, John, *Painting with Light,* New York: Macmillan Company, 1949.

Battison, John, *Movies for Television,* New York: Macmillan Company, 1950.

Becker, Samuel L., and H. Clay Harshbarger, *Television: Techniques for Planning and Performance,* New York: Henry Holt and Company, 1958.

Bettinger, Hoyland, and Sol Cornberg, *Television Techniques*, New York: Harper Brothers, 1955.

Bolen, Murray, *Fundamentals of Television*, Los Angeles: Hollywood Publishers, 1950.

Bretz, Rudy, *Techniques of Television Production*, New York: McGraw-Hill, 1953.

Bretz, Rudy, and Edward Stasheff, *Television Scripts for Staging and Study*, New York: A. A. Wyn and Company, 1953.

Chester, Giraud, and Garnet R. Garrison, *Television and Radio*, New York: Appleton-Century and Crofts, 1956.

Chinn, Howard A., *Television Broadcasting*, New York: McGraw-Hill, 1953.

Crews, Albert, *Radio Production Directing*, New York: Houghton-Mifflin Company, 1944.

Curran, Charles W., *Screen Writing and Production Techniques*, New York: Hastings House, 1958.

Duschinsky, Walter, *TV Stations*, New York: Rinehart and Company, 1954.

Ennes, Harold E., *Low-Power Telecasting*, Indianapolis: Howard W. Sams, 1954.

Ennes, Harold E., *Principles and Practices of Telecasting Operations*, Indianapolis: Howard W. Sams, 1953.

Evans, Ralph, *An Introduction to Color*, New York: Wiley and Sons, 1948.

Hodapp, William, *The Television Manual*, New York: Farrar, Straus, and Young, 1953.

Hodgson, Richard, and H. Jay Bullen, *How to Use a Tape Recorder*, New York: Hastings House, 1957.

Hubbell, Richard, *Television Programming and Production*, New York: Rinehart and Company, 1956.

Hyde, Stuart, *Television and Radio Announcing*, Boston: Houghton-Mifflin, 1959.

Kaufman, William I., *How to Direct for Television*, New York: Hastings House, 1955.

Kehoe, Vincent J-R., *The Technique of Film and Television Makeup*, New York: Hastings House, 1957.

Livingston, Don, *Film and the Director*, New York: Macmillan and Company, 1953.

Mayer, Morris A., and Rodney Chipp, *Closed Circuit TV System Planning*, New York: John F. Rider, Inc., 1957.

McMahan, Harry W., *Television Production*, New York: Hastings House, 1957.

McMahan, Harry W., *Television Tape Commercials*, New York: Hastings House, 1960.

O'Meara, Carroll, *Television Program Production*, New York: The Ronald Press, 1955.

Oringel, Robert S., *Audio Control Handbook*, New York: Hastings House, 1956.

Pittaro, Ernest M., *TV and Film Production Data Book*, New York: Morgan and Morgan, Inc., 1959.

Poole, Lynn, *Science via Television*, Baltimore: Johns Hopkins University Press, 1950.

Reisz, Karel, *The Technique of Film Editing*, New York: Farrar, Straus, and Cudahy, 1959.

Royal, John, *Television Production Problems*, New York: McGraw-Hill, 1951.

Settel, Irving, and Norman Glenn, *Television Advertising and Production Handbook*, New York: Crowell, 1953.

Spottiswoode, Raymond, *Film and Its Techniques*, Los Angeles: University of California Press, 1951.

Stasheff, Edward, and Rudy Bretz, *The Television Program*, New York: A. A. Wyn and Company, 1951. (2nd edition, 1956)

Tall, Joel, *Techniques of Magnetic Recording*, New York: Macmillan and Company, 1957.

Turnbull, Robert B., *Radio and Television Sound Effects*, New York: Rinehart and Company, 1951.

Wade, Robert J., *Designing for Television*, New York: Pelligrini and Cudahy, 1952.

Wade, Robert J., *Operation Backstage: Staging Services Handbook*, New York: National Broadcasting Company, 1951.

Wade, Robert J., *Staging Television Programs and Commercials*, New York: Hastings House, 1954.

White, Melvin R., *Beginning Television Production*, New York: Burgess, 1954.

Equipment catalogs are also available from the following suppliers:

1. Adler Electronics, 1 LeFevre Lane, New Rochelle, New York.
2. Ampex, Inc., Redwood City, California.
3. Ariel-Davis Company, 3687 South State Street, Salt Lake City, Utah.
4. Century Lighting Company, 521 West 43rd Street, New York 36, New York.
5. Chart-Pak, Leeds, Massachusetts.
6. Collins Radio Company, Cedar Rapids, Iowa.
7. Dage Equipment Company, Michigan City, Indiana.
8. Eastman Kodak Company, Rochester, New York.
9. Gates Radio Company, Quincy, Illinois.
10. General Electric Company, Electronics Park, Syracuse, New York.
11. General Precision Laboratories, Pleasantville, New York.
12. Graflex, Inc., 3750 Monroe Avenue, Rochester 3, New York.
13. M. Grumbacher, Inc., 460 West 34th Street, New York 1, New York.
14. Kliegl Brothers, 321 West 50th Street, New York 19, New York.
15. Kurtz Brothers, 1001 Cassatt Road, Paoli, Pennsylvania.
16. Magnecord, Midwest Instruments Inc., 41st Street and Sheridan Road, Tulsa, Oklahoma.
17. Minnesota Mining and Manufacturing Company, 900 Bush Avenue, St. Paul 6, Minnesota.
18. Motorola, Inc., 4501 West Augusta Boulevard, Chicago 51, Illinois.
19. Paramount Theatrical Supplies, 32 West 20th Street, New York 11, New York.
20. Radio Corporation of America, Broadcast Equipment Division, Camden, New Jersey.
21. Sarkes Tarzian, Inc., Bloomington, Indiana.
22. S. O. S. Cinema Supply Company, 602 West 52nd Street, New York 19, New York.
23. Television Equipment Company, 161 East Grand Avenue, Chicago 11, Illinois.
24. Teleprompter, Inc., 311 West 43rd Street, New York 36, New York.
25. Trans-Art, Inc., 237 Huguenot Street, New Rochelle, New York.
26. F. Weber Company, 1220 Buttonwood Street, Philadelphia 23, Pennsylvania.

## TV STUDIO CAMERA OPERATION AND TECHNIQUE

Abbot, Waldo, and Richard L. Rider, *Handbook of Broadcasting*, New York: McGraw-Hill, 1957, pp. 317-338.

Basic information on camera care; elements of a camera chain, illustrations of present-day camera types. Basic discussion of lenses, depth of field, depth of focus. Camera mounts, camera movements, illustrations of pedestals and cranes. Elementary presentation of basic camera information. Good introduction.

Bettinger, Hoyland, and Sol Cornberg, *Television Techniques*, New York: Harper Brothers, 1955, pp. 1-9; 20-47; 61-73.

Section 1: Presentation of the image orthicon tube; line drawings to illustrate.

Section 2: Detailed discussion of pictorial composition and continuity; psychological factors involved. Significance of line, mass, and form. Excellent line drawings to illustrate various aspects of picture composition.

Section 3: Discussion of basic movements and shots. Brief comment on the ideal television cameraman.

Bretz, Rudy, *Techniques of Television Production*, New York: McGraw-Hill, 1953, pp. 11-86.

Basic functions of the television cameraman and his relationship to the television crew. Detailed section of types and methods of operating the TV camera, including basic video-engineering problems. Handling of the camera, types of shots, and movements possible; mounts and supports for cameras. Detailed chapter on television lenses: zoomar type, telefoto, selection of lenses. Discussion of certain equipment now in need of revision, but this is still a most helpful and thorough book.

Chinn, Howard A., *Television Broadcasting*, New York: McGraw-Hill, 1957, pp. 30-40; 63-74; 216-220; 272-282.

Technical discussion of the image orthicon camera; lenses used on television cameras. Camera pedestals and cranes; types and functions. Camera operating procedures, lens flare; short discussion of shot considerations, and critical area problems; function and

importance of the gray scale. An excellent, technically oriented presentation of camera operation.

Curran, Charles W., *Screen Writing and Production Techniques,* New York: Hastings House, 1958, pp. 43-50; 131-132; 181-182.

Brief treatment of shots, role of the cameraman and discussion of basic wages of a television crew under union regulations.

Ennes, Harold E., *Low-Power Telecasting,* Indianapolis: Howard W. Sams and Company, 1954, pp. 37-44; 51-70; 71-84.

Discussion of the vidicon cameras: the pickup tube, special characteristics of film cameras and the live studio cameras.

Hubbell, Richard W., *Television Programming and Production,* New York: Rinehart and Company, 1956, pp. 57-76; 91-113.

Introductory material on lenses, excellent visualization of depth of focus, description of the "ideal" camera. Well illustrated chapter on camera composition and camera techniques. Line drawings used to visualize.

McMahan, Harry W., *Television Production: The TV Handbook and Dictionary,* New York: Hastings House, 1957, pp. 118-121.

Very brief and basic discussions of terms encountered in camera operation.

Mayer, Morris A., and Rodney Chipp, *Closed Circuit TV System Planning,* New York: John F. Rider, Inc., 1957, pp. 133-156; 165-186.

Technical consideration of optics as related to television camera usage — vidicon and image orthicon. Consideration of tubes themselves. List of do's and don'ts for vidicon operation. Types of industrial and studio cameras and camera control units; short discussion of color camera with line drawing of operational characteristics. Materials on costs now out of date.

Equipment catalogs are available from suppliers numbered 2, 7, 8, 10, 11, 12, 18, 20, and 21, listed on page 58.

## TELEVISION LIGHTING

Abbot, Waldo, *Handbook of Broadcasting,* New York: McGraw-Hill, 1957, pp. 352-357.

Basic concepts of lighting as electronic and artistic functions. Basic types of lighting equipment. Elementary discussion of lighting problems.

Alton, John, *Painting with Light,* New York: Macmillan Company, 1949.

Entire book is a thorough coverage of the various applications of interesting and artistic lighting techniques. Discussion of equipment used. Many excellent ideas about lighting tricks and experiments.

Bettinger, Hoyland, and Sol Cornberg, *Television Techniques,* New York: Harper and Brothers, 1955, p. 198-226.

Discussion of the nature of light, light measurement, lighting techniques, and types of equipment. Very good and useful examples of lighting problems and designs.

Bretz, Rudy, *Techniques of Television Production,* New York: McGraw-Hill, 1953, pp. 337-381.

Approaches to lighting—comparison to stage and motion picture lighting. Definition of lighting terms, light levels, instruments, and sources. Discussion of lighting boards, dimmers, and types of special effects lighting.

Chinn, Howard, *Television Broadcasting,* New York: McGraw-Hill, 1953, pp. 262-272; 556-570.

Characteristics of the television system as they relate to lighting. Definition of terms: base, key, eye, modeling, back, special effects. Types of lighting equipment and control. Generally a more concise and technical handling of this area than other books on production. Good illustrations.

Hubbell, Richard, *Television Programming and Production,* New York: Rinehart and Company 1956, pp. 122-132.

Types of light; basic elements. Elementary consideration of lighting problems. General in its approach.

McMahan, Harry W., *Television Production: The TV Handbook and Dictionary,* New York: Hastings House, 1957, pp. 94-98.

Description of lighting through presentation of definitions of many

words associated with lighting operation and practices. Comprehensive and thorough.

Mayer, Morris A., and Rodney D. Chipp, *Closed Circuit TV System Planning,* New York: John F. Rider, Inc., 1957, pp. 157-164.

Discussion of foot-candles and lighting levels. Limited handling of lighting equipment.

Spottiswoode, Raymond, *Film and Its Techniques,* Los Angeles: University of California Press, 1957, pp. 337-348.

Essentially a discussion of lighting for film, although handling of terms and concepts of equipment can usefully transfer to television lighting needs.

Equipment catalogs are available from suppliers numbered 3, 4, 14, 18, 19, and 23, listed on page 58.

## TELEVISION AUDIO EQUIPMENT AND ITS OPERATION

Abbot, Waldo, *Handbook of Broadcasting,* New York: McGraw-Hill, 1957, pp. 1-10; 364-382.

Elementary discussion of studio construction, microphone types, and control consoles. Later section is on disc and tape recording equipment and techniques. General introductory book.

Bretz, Rudy, *Techniques of Television Production,* New York: McGraw-Hill, 1953, pp. 382-412.

Detailed presentation of microphone characteristics, types of mikes, placement, boom mikes. Discussion of the operation of types of audio consoles and other equipment, construction of echo chambers. Very helpful and instructional book.

Chinn, Howard A., *Television Broadcasting,* New York: McGraw-Hill, 1953, pp. 224-243.

Detailed discussion of studio audio facilities, sound effects, intercom, and cueing facilities, and talk-back cueing systems.

Crews, Albert, *Radio Production Directing,* New York: Houghton-Mifflin Co., 1944, pp. 47-124.

The nature of sound in radio, its characteristics, perception, and its transformation into electrical energy. Basic equipment for audio: microphones, studios, control rooms, equipment. Detailed introduction. Somewhat dated in terms of its application to new equipment and developments.

Hodgson, Richard, and H. Jay Bullen, *How to Use a Tape Recorder,* New York: Hastings House, 1957, pp. 166-190; 193-209.

Types of microphones used with tape recorders, reels, tapes, splicing and editing tapes, extensive description of editing methods. Presentation of methods for handling tapes and related audio facilities. Thorough and extensive. Broad glossary of terms related to audio-operation.

Hyde, Stuart W., *Television and Radio Announcing,* Boston: Houghton-Mifflin Co., Inc., 1959, pp. 42-75.

Discussion of F.C.C. requirements for operating personnel, log maintenance. Description of hand signals and current audio equipment. Not too technical.

Mayer, Morris A., and Rodney D. Chipp, *Closed Circuit TV System Planning,* New York: John F. Rider, Inc., 1957, pp. 190-195.

Relation of audio to closed-circuit systems. Requires basic knowledge of audio for comprehension. Good diagrams of audio setup for television requirements.

McMahan, Harry W., *Television Production: The TV Handbook and Dictionary,* New York: Hastings House, 1957, pp. 142-153.

Thesaurus of terms applied to methods for recording sound on tape or film; sound equipment, and general terms used in the industry.

Oringel, Robert S., *Audio Control Handbook,* New York: Hastings House, 1956, pp. 1-89; 135-141.

Entire book is a very comprehensive treatment of control equipment, tapes, tape editing, patching, levels, cueing systems and techniques, microphone use and techniques, studio microphone setups, studio-control room intercoms, remote broadcasts.

Spottiswoode, Raymond, *Film and Its Techniques,* Los Angeles: University of California Press, 1951, pp. 312-322.

Technical description of methods of magnetic recording. Discussion of basic problems of recording in an actual production situation. Film oriented, but easily adapted to television needs.

Tall, Joel, *Techniques of Magnetic Recording,* New York: Macmillan Company, 1957, pp. 160-185; 217-242.

Complete description of tape recording as it relates to radio and television program production. Editing, timing, equipment, and other more detailed areas. Entire book is useful for information about magnetic recording. Good bibliography from a variety of technical and broadcasting journals.

Equipment catalogs available from suppliers numbered 2, 6, 9, 10, 16, 17, and 20, listed on page 58.

## PROJECTION OPERATIONS

Bettinger, Hoyland, and Sol Cornberg, *Television Techniques,* New York: Harper and Brothers, 1955, pp. 178-190.

The use of motion pictures in television programs, handling and integrating films, editing, and basic concepts of film production. Not slanted directly at operational problems.

Bretz, Rudy, *Techniques of Television Production,* New York: McGraw-Hill, 1953, pp. 171-199.

Projection equipment: slide, film strip and film projectors. Special uses of some equipment, setups in projection room, operating procedures. Useful introduction, but somewhat dated because of new equipment developments.

Chinn, Howard A., *Television Broadcasting,* New York: McGraw-Hill, 1953, pp. 283-323; 324-369; 370-401.

Detailed technical description of iconoscope and image orthicon film cameras as well as flying spot scanner and monoscopes. Technical decription of various pull-down systems, multiplexing, mirror-plexing. Procedures for film splicing, cleaning, and handling.

McMahan, Harry W., *Television Production: The Television Handbook and Dictionary,* New York: Hastings House, 1957, pp. 172-183.

Film-editing terminology and procedures. Very helpful orientation to industry terms.

Equipment catalogs are available from suppliers numbered 7, 8, 10, 20, and 21, listed on page 58.

## TELEVISION GRAPHICS

Bretz, Rudy, *Techniques of Television Production,* New York: McGraw-Hill, 1953, pp. 136-170.

Thorough discussion of graphic materials for television, showing types used and methods for construction. More helpful for those actually working with television graphics than as an orientation to the area.

McMahan, Harry W., *Television Production: The TV Handbook and Dictionary,* New York: Hastings House, 1957, pp. 122-127.

Identification of terminology used in art, titles, and scenery for television. Useful and helpful orientation.

Settel, Irving, Norman Glenn, and Associates, *Television Advertising and Production Handbook,* New York: Thomas Y. Crowell and Company, 1953, pp. 425-427.

Discusses various visual aids and their application to television production. Thorough coverage of visual techniques. Has many ideas to stimulate a graphic artist.

Wade, Robert J., *Designing for Television,* New York: Pelligrini and Cudahy, 1952, pp. 143-173.

A highly visualized presentation of grapic arts in television. Carefully illustrated. Discusses structure of graphics department and equipment needed for an art room. Detailed.

Wade, Robert J., *Staging TV Programs and Commercials,* New York: Hastings House, 1954, pp. 201-210.

Many ideas for lettering and titling. Short, but helpful because of the variety of ideas presented from networks and stations.

Catalogs available from suppliers numbered 5, 13, 15, 19, 25, and 26, listed on page 58.

## TELEVISION SCENERY

Bretz, Rudy, *Techniques of Television Production,* New York: McGraw-Hill, 1953, pp. 296-327.

Methods of set construction, ideas for special effects, floor coverings, considerations of set design, and problems involved in painting. Comprehensive handling of the planning and

construction aspects of scenery for television.

Chinn, Howard A., *Television Broadcasting*, New York: McGraw-Hill, 1953, pp. 244-262.

Discussion of set building and scene design from a technical point of view. Points out the limitations of the television system as they apply to scene contruction and staging. Very thorough presentation of the limitations imposed on scene design by the technical characteristics of the television system.

McMahan, Harry W., *Television Tape Commercials*, New York: Hastings House, 1960, pp. 79-81.

Short description of "picture settings" and backgrounds which can be created electronically.

Settel, Irving, Norman Glenn, and Associates, *Television Advertising and Production Handbook*, New York: Thomas Y. Crowell and Company, 1953, pp. 148-179.

Elementary presentation of staging and set-building problems.

Wade, Robert J., *Designing for Television*, New York: Pelligrini and Cudahy, 1952.

Entire book is extremely useful as a text for the person seriously interested in scene design for television. Very thorough and well illustrated. Other books provide a better overview, but this is a most useful book for its completeness and detail in handling the problems of television set design.

Wade, Robert J., *Staging TV Programs and Commercials*, New York: Hastings House, 1954.

This later book by Wade considers in detail the relationship of the scene designer to the remainder of the production crew. Goes into more details of staging and presentation than the earlier book. This, too, is well illustrated and comprehensive.

## TELEVISION DIRECTION

Bettinger, Hoyland, and Sol Cornberg, *Television Techniques*, New York: Harper and Brothers, 1955, pp. 122-150.

Principles of producing different types of programs from a variety show to serious musical programs. Production planning and follow-through with cast. Good background and orientation from a production point of view.

Bretz, Rudy, *Techniques of Television Production, New York: McGraw-Hill*, 1953, pp. 87-104.

Discussion of the principles of television cutting; cutting on action, reaction, the intercut. Description of transition methods and their application to television cutting.

Hubbell, Richard, *Television Programming and Producion*, New York: Rinehart and Company, 1954, pp. 114-121.

Description of transitional devices and their application in television.

Kaufman, William I., *How to Direct for Television*, New York: Hastings House, 1955.

A short book with articles by well-known television directors, giving their ideas about program production and direction. Good introduction to industry problems of directors in actual broadcast situations.

Stasheff, Edward, and Rudy Bretz, *The Television Program*, New York: Hill and Wang, Inc., 1956 (2nd edition), pp. 215-345.

Very useful and descriptive section of handling programs from the director's point of view. Covers planning sessions, script usage, using rehearsal time well. Appendices have good examples of actual broadcast scripts showing director's use during a production.

## ADDRESSES FOR JOURNALS

*NAEB Journal*, 119 Gregory Hall, Urbana, Illinois.

*Journal of Broadcasting*, University of Southern California, University Park, Los Angeles 7, California.

*Journal of the S.M.P.T.E.*, 55 West 42nd Street, New York 36, New York.

*Audio-Visual Instruction*, D.A.V.I., 1201 16th Street, NW, Washington 6, D.C.

*Audio-Visual Communication Review*, D.A.V.I., 1201 16th Street, NW, Washington 6, D.C.

*Broadcasting*, 1735 deSales Street, NW, Washington 6, D.C.

*Broadcast News*, R.C.A., Camden, New Jersey.

# Projects and Products

**a column by Philip Lewis**

*Director, Bureau of Instruction Materials*
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## The Completely Portable Microphone

A new breakthrough in "wireless" microphones has been accomplished by Vega Electronics Corporation. This novel product eliminates the usual objections to such an approach. Through the use of transistors and a frequency modulation transmission system, miniaturization and noise-free communication has been achieved.

Known as the Vegamike, the microphone, transmitter, and power supply are all contained within a cylindrical metal tube 1" in diameter and 5" in length (Figure 1). The antenna in this illustration serves as the lavalier cord to support the unit around the teacher's neck. The advantage of this device is obvious and permits the instructor to walk to any point in the classroom or studio without the usual trailing wire.

For special applications where a

Figure 1

Figure 2

hand-held microphone is desirable when interviewing persons, etcetera, a special model has been produced (Figure 2). In this instance a telescoping antenna is provided for signal radiation. The Vegamike in this form was used effectively at both national political conventions. Figure 3 shows (center of table) five separate receiving units arranged to pick up signals from a similar number of wireless microphones.

The present design of the transmitter in the microphone meets FCC requirements and the circuit has been arranged to minimize drift due to temperature change, proximity to the body, and even to holding the hand on the antenna. Final power is approximately 25 to 35 milliwatts, depending on the channel assignment. Radiated power is about one-half of this value.

The microphone units are ordinarily tuned to either 33.14, 35.02, or

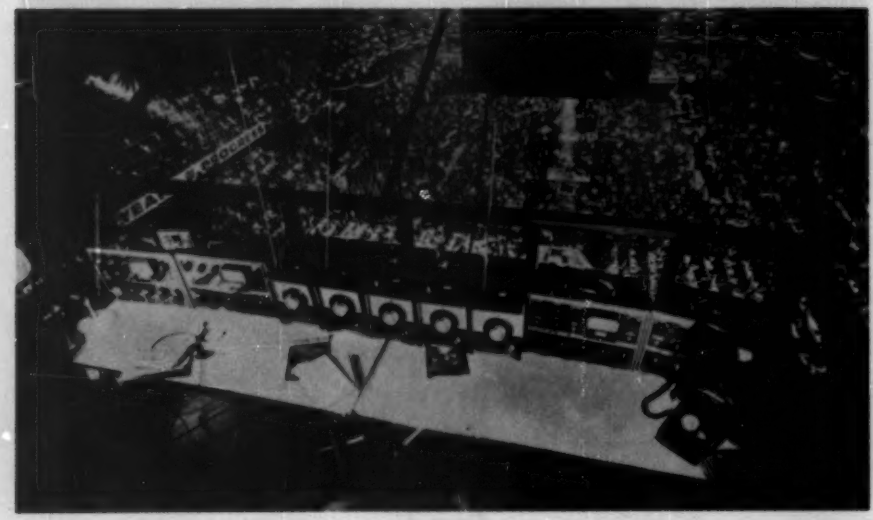

Figure 3

42.98 megacycles for general business use. This allows several separate systems to be used simultaneously in the same general area. For example, three simultaneous lectures may be given in adjoining rooms without mutual interference. By special request, units can be set at the factory to any other frequency allocation in the 25 to 45 megacycle band depending on FCC channel assignment for specific uses. These include radio-rebroadcast at 26.10 megacycles or for special police frequencies, etc.

An exciting application of this microphone is illustrated in Figure 4. Here it is possible for a person to feed signals into the public address system serving an entire stadium. Countless related applications will suggest themselves. Similar arrangements can be made for use in auditoriums and large meeting halls. Figure 5 shows a close-up of the two models and a receiver unit.

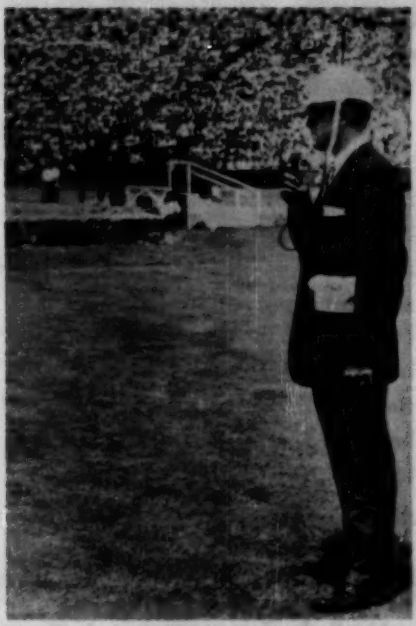

Figure 4

Figure 5

The receiver unit is portable but may be rack mounted if minor changes are effected. A 36" telescoping antenna is recessed within the case when not in use. A 72-ohm coaxial connector facility allows the receiver to be used with any suitable external antenna. The tuning eye at the top of the control panel gives visual indication of the maximum carrier signal. A small, built-in monitor speaker is also provided, and a variable squelch circuit control eliminates noise generation when the microphone power is turned off.

An extra feature of this receiver is a special connection for the

Figure 6

Vegatrol. The Vegatrol is an external accessory unit best described as a carrier-operated relay. When the carrier from the microphone is being received, a relay is energized. This facility makes it possible to control any external on-off function, such as starting or stopping an associated tape recorder, ringing bells, or lighting lights from the microphone location.

Mr. Ray Litke of the Audio-Visual Department of San Jose State Teachers College, California. was assigned the task of developing the Vegamike by Dr. Richard B. Lewis, head of the department, for use with their closed-circuit television activities. Figure 6 illustrates the use of this device in a classroom fitted for remote observation purposes. The instructor is able to work with students in any location in the room with the assurance that her remarks will be picked up faithfully for monitoring by the teacher-training group some distance away.

Additional details are available from Vega Electronics Corporation, Cupertino, California.

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The NAEB began 35 years ago, as a loosely knit organization of a few pioneers in educational broadcasting. As the only professional or trade association in the field, throughout the years it has worked to improve the professional status of the educational broadcaster and the quality of educational programing. Nine years ago, members established a tape distribution network for educational radio. This self-supporting network today supplies over a hundred educational radio stations with ten hours of programing a week, programs from foreign as well as domestic sources.